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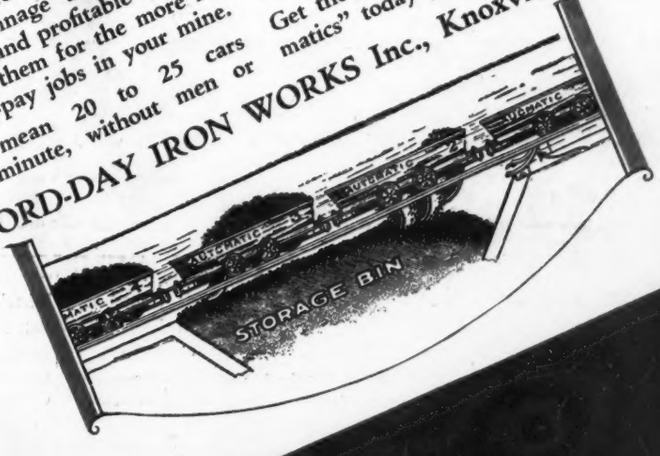

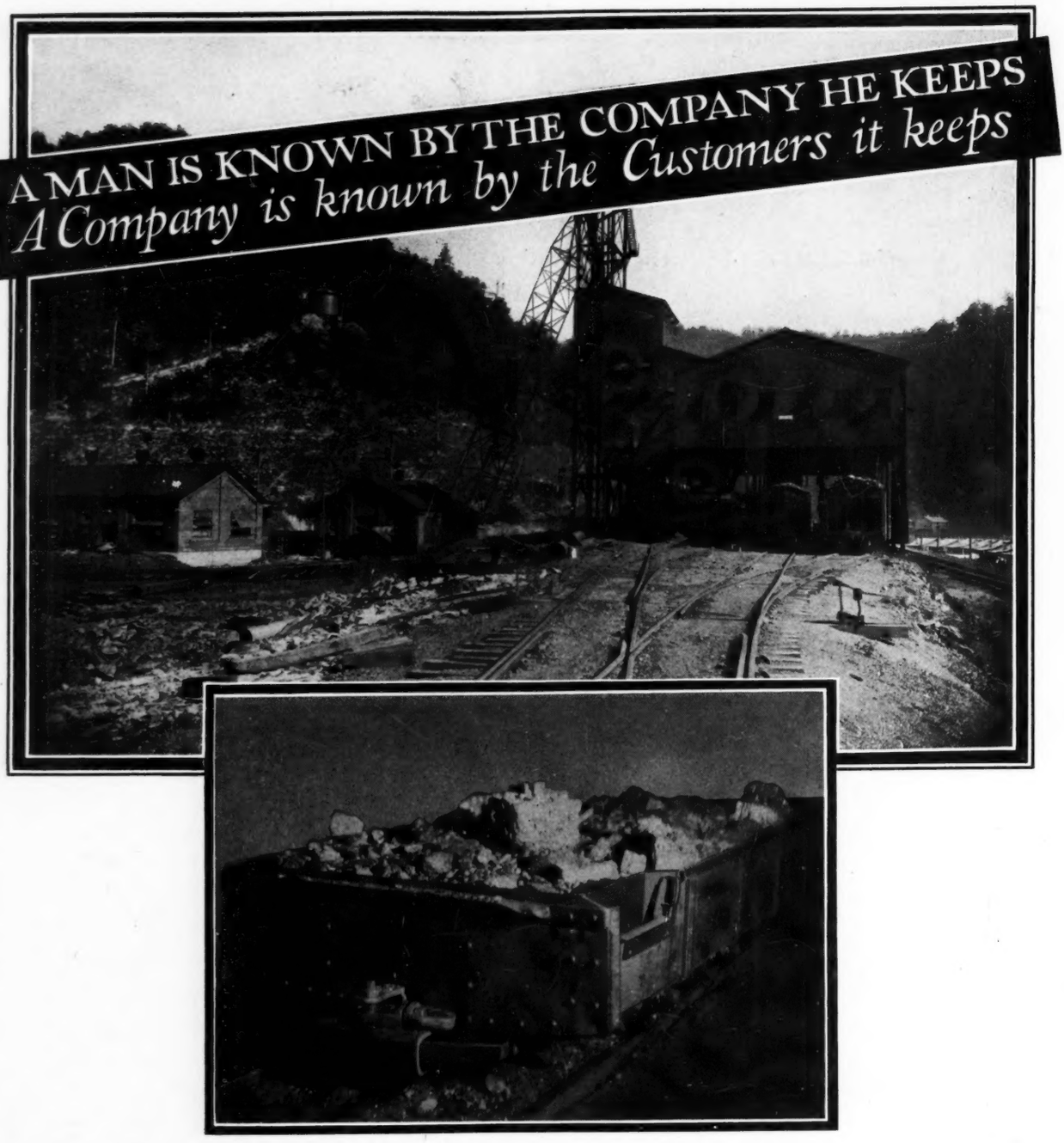

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 30 — New York, October 28, 1926 — *Number* 18

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COAL AGE

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Where Explosives Are Unnecessary

In most localities throughout the country, coal is produced by undercutting and shooting down. In some places the face can be overcut and the coal shot up; in others it is centercut and shot both up and down. In next week's issue of *Coal Age*, however, R. Dawson Hall will describe a region in New Mexico where, for some reason not yet clearly understood, whenever the face is cut into, coal flies from it in chunks and splinters. So pronounced is this action that undercutting had to be abandoned. In its stead, shearing has been tried with somewhat better results. Only an extremely small amount of powder is required to bring down the coal. The roof swells on exposure to the air and it seems to be an open question as to whether it is this action of the superincumbent strata or their weight that causes the coal to spall off in the manner just described. Certain phenomena seem to substantiate either theory.

Fire Protection Underground

In next week's issue also, W. Z. Price will continue his description of the safety measures adopted at Nemacolin. Next to the mine explosion the underground fire is perhaps the most dangerous contingency with which the coal operator is ever called upon to cope. Most such fires if "nipped in the bud," amount to little, whereas if they are allowed to burn unchecked for even a few minutes they may attain decidedly formidable proportions. For this reason the somewhat elaborate precautions against fire taken by the Buckeye Coal Co. will be of more than usual interest to mining men.

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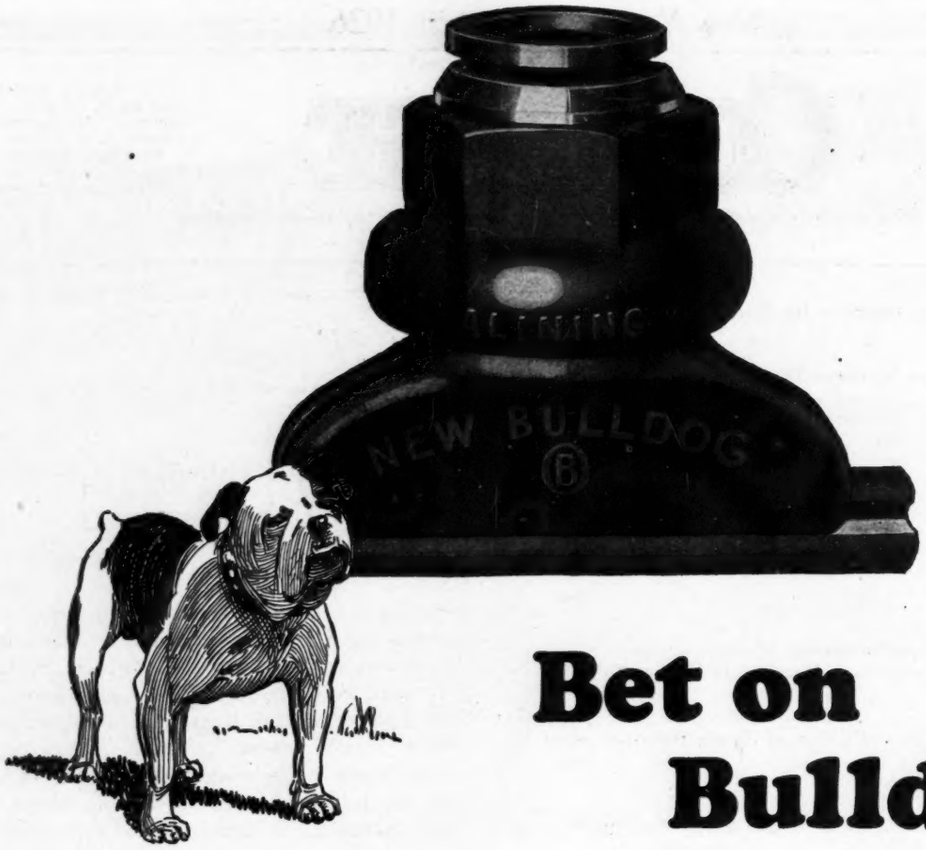

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 30 | NEW YORK, OCTOBER 28, 1926 | Number 18

West Virginia's 1,200 Mines

WORD COMES from West Virginia that 1,208 commercial coal mines are operated within the state confines. In addition to this number there are between 200 and 300 small operations employing from 3 to 5 men each. The product of these "dog holes" and "banks" does not, however, appreciably affect the aggregate output of the state.

For years past the number of mines operating in West Virginia has been steadily decreasing. Consolidations of both physical properties and managements have been many. Concentration of workings also has been largely developed and the number of people engaged in the industry has continuously grown. Thus in spite of an adverse geographical location with respect to the markets served this state has consistently forged ahead as a coal producer.

Although much has been accomplished, much more remains to be done. Mechanical methods of loading have made great strides, yet this means of coal production has perhaps not yet gained the impetus in West Virginia that it has attained in some other fields. Nevertheless the output for the first seven months of the current year closely rivaled that of Pennsylvania. Years ago the output of West Virginia passed that of Illinois. It would now appear as if the Keystone State would have to look well to her laurels as a coal producer or at no remote date she may be compelled to concede them to her sister to the southward.

Keep the Cars Moving

SINCE ITS RECOVERY from the slump following the end of the anthracite strike last winter, the bituminous industry has been unusually free from transportation difficulties. Production has been mounting steadily in recent weeks, but complaints of car shortage have been infrequent. Most of these have originated in Kentucky. When the situation there is contrasted with that prevailing a few years ago, the improvement made has been little short of remarkable.

If production is to continue unchecked by transportation disabilities, shippers and receivers of coal must extend full co-operation to the railroads. Surplus equipment available for coal loading has been steadily decreasing. On Oct. 8 the number of idle cars available for that purpose had dropped to 20,194, the lowest in many months. While a surplus carrying capacity of 1,010,000 tons may seem ample, as a matter of fact it is not when consideration is given to the fact that a substantial proportion of the cars now in service are used in what amounts to a rapid shuttle service between the mines and the lakes and between the mines and tidewater. Distribute those cars in ordinary commercial service and their capacity would be reduced by longer hauls and slower terminal handling.

Every producer of coal can help to keep transportation fluid by giving prompt billing on loads at the mines. Every receiver of coal can assist by unloading promptly every car received. By such co-operation a transportation crisis may be avoided. Keep the cars moving!

Coal in the Arctic

OF ALL THE MINERALS yielded by nature coal is perhaps the most widely distributed. Although of tropical or semi-tropical origin, this fuel is nevertheless found in some of the coldest countries of the earth today. Thus Spitzbergen annually furnishes thousands of tons of coal to adjacent countries, chiefly Norway and Sweden. Although this coal deposit lies well within the Arctic Circle, the presence of fossil melons and other tropical plant remains associated with the coal measures, shows conclusively that Spitzbergen once enjoyed a torrid or sub-torrid climate.

Lately comes the report from Canada that coal in workable thickness has been found on Baffin Island, the major portion of which lies north of the Arctic Circle. Although this latter coal deposit doubtless is a few degrees south of the one in Spitzbergen it is probable that the rigors of its climate are more severe. Because of this fact, as well as the consideration that there is no nearby market or one that can be served more readily from Baffin Island than from other sources of supply, it is doubtful if the deposits there found will ever be developed.

Coal has long been known to exist in other arctic regions such as Alaska, Greenland, northern Russia and Siberia. North America seems to be particularly well supplied with this fuel, its deposits stretching from Panama to as far north as man has yet been able to explore. It is quite possible that its arctic or what might almost be styled its polar deposits may some day prove to be as extensive as any that are now worked in the more temperate portions of the earth.

Management and Research

SCIENTISTS INTERESTED in the transformation of coal into gasoline, as well as other petroleum products and methyl alcohol, will meet at the Carnegie Institute of Technology, Pittsburgh, Pa., Nov. 15-18. At that time they will report their progress in attempts at the manufacture of substitutes for gasoline from complete gassification of coal, high-temperature distillation, low-temperature distillation, coal-tar products, power, smokeless fuel and fertilizers.

The economic benefits that would result from successful research are great. Increased consumption of coal is the advantage accruing to the coal industry. The market for gasoline is enormous. If this liquid could be successfully made from coal it would increase the consumption several million tons per year.

Certainly, there are obstacles such as production,

financing and marketing the products, but these are the problems of management. Let the scientiest furnish a practicable method and the production executive and engineer will develop the mechanical methods of production. This is the challenge of management to the scientist.

Let the scientist work along his path of pure science in the search for the new product; and let management shoulder its burden of perfecting the commercial process for its production and marketing, spurred on by the wonderful market possibilities.

The scientists attending this conference should be encouraged because of the fact that representative engineers, bankers, manufacturers, public utility magnates, as well as coal executives and government officials, are going to hear the reports of their progress. This should cheer them on to new and greater efforts.

Mr. Green's Five-Day Week

IS A FIVE-DAY WEEK to become the general rule in industry? Already the goal of certain crafts, Henry Ford has pushed the question to the forefront of economic discussion by placing his far-flung enterprises on the five-day basis. Conflicting opinions struggle for expression in the public prints. President Green of the American Federation of Labor loses no time in incorporating the proposal into the program of organized labor. Men like Judge Gary and John E. Edgerton, president of the National Association of Manufacturers, find the suggestion almost blasphemous.

The bituminous industry is so situated that it can view the discussion on the factual side of the question with something akin to academic detachment. Seldom in the last forty years have the soft-coal mines of the United States as a whole come within striking distance of that basis. With this industry the question is not how can the number of days worked per year be reduced but how can they be increased. Intermittency of operation has been the industry's curse. Even in the banner year of 1918 over 52 per cent of the workers were employed at mines operating less than 240 days. In a year of depression, such as 1921, only 10.6 per cent of the workers had a chance to labor 240 days or more.

Mr. Green's indorsement of a five-day week, however, embodied one qualification which would mean much to the bituminous coal industry. The head of the American Federation of Labor stated that the worker's right to the shorter week must rest upon increased productivity. Wages, he said, would not be sacrificed. In other words, labor would not demand six days' pay for five days' work until increased production through mechanization or greater individual efficiency made it possible to accomplish in five days what now takes six. Some industries, he added, have reached that stage; among these is the bituminous coal industry.

The significance of this qualification cannot be overemphasized. In the coal industry it represents a complete reversal of the theories heretofore pressed by labor executives. When, some years ago, the thirty-hour week first was written into the wage demands of the United Mine Workers, it was advocated not on the grounds of efficiency but as assuring every one then holding a union card of an equal share in running time. Higher base rates were urged not on the ground that the worker was producing more but that he needed the money to maintain decent living standards under intermittent employment. In effect the old formula was that wages must be high to make inefficiency and intermittency profitable to the part-time worker.

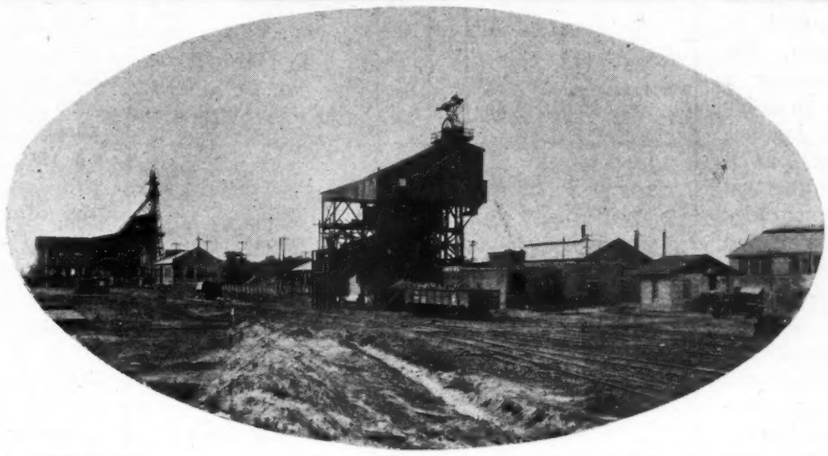
This old formula also had its place in the attitude of organized labor toward the introduction of machinery. The whole wage structure in the coal industry has been built up upon manual labor. Notwithstanding the fact that less than 20 per cent of the bituminous coal is hand-mined, pick-mining rates still are the basis upon which other tonnage rates are made. Despite the union's enthusiasm for mining machinery voiced in Mr. Lewis' "The Miners' Fight for American Standards," there are many operators who harbor the belief that it is the deliberate policy of the union to fix machine rates so high that the producers will not benefit by the introduction of labor-saving equipment into the mines.

If we are to take Mr. Green's formula at its face value, however, justification of the five-day week in coal mining must rest upon increased output per man without an increase in the labor costs per ton. We must, presumably, have steady five-day weekly operations and the same tonnage in five days that ordinarily would be produced in six. In 1923, for example, the average bituminous output per man per day worked was 4.47 tons. Simple multiplication gives a six-day yield of 26.82 tons. If that tonnage is to be produced in five days, the average per working day must be raised to 5.36 tons. On a 250-day year basis—which makes due allowance for holidays—the average annual output per worker would be 1,340 tons. The actual average in 1923, as reported by the U. S. Geological Survey, was 801 tons.

Production in 1923 was 564,564,662 tons. If each worker had averaged 1,340 tons that year, the output could have been mined with 421,317 men. The average number actually employed that year, according to government statistics, was 704,793. Inasmuch as coal is not one of those commodities the consumption of which would be substantially increased by giving the worker more leisure to pursue cultural and recreational aspirations, it follows that the application of the Green formula in 1923 would have meant a reduction of 40.2 per cent in the working forces of the bituminous mines.

Just what would become of the army of nearly 300,000 summarily cut off from their accustomed source of livelihood is still one of the unsolved problems of stabilization. It hardly will be argued that the demand for coal will expand so rapidly in the next few years that the mines will be able to offer this army steady employment. On the contrary, it would be more in keeping with Mr. Green's formula to assume that greater mechanization of the mines and increased efficiency of the individual worker would be equal to the normal broadening of consumer fuel requirements. Even a sudden return to 1918 peak production without bettering 1923 efficiency would give employment to less than 12,000 of the men thrown out of work by the successful application of the Green five-day week formula.

There are few producers who would not gladly exchange their present broken running time for a guaranteed five-day week operation throughout the year. Could Mr. Green and his associates remove the many practical obstacles which now stand in the way of the realization of such a goal, the surviving mine owners would welcome the application of his formula to their industry.



Valier Mine Continues to Improve Its Haulage

Twenty Small Locomotives Gather and Two Big Units Haul the Entire Daily Output of Over 6,000 Tons—Trips Are Dispatched by Telephones and Signals—Bottom Work Is So Systematized that No Boss Is Needed

By Alphonse F. Brosky
Assistant Editor, *Coal Age*, Pittsburgh, Pa.

HOW WIDE MAY BE the margin for improvement in the transportation system of many a coal operation is illustrated by the specific case of the Valier mine of the Valier Coal Co., in southern Illinois. In the spring of the present year the haulage system at this operation was completely changed and, as a result, the operating costs were much reduced and several sources of danger and delay eliminated. Primarily, these economies are the outcome of an extensive use of track switches, signals and telephones in a system that is precisely controlled by a dispatcher.

The change mentioned was undertaken in order to eliminate "waiting" delays, thus facilitating higher duty from each locomotive. By this means fewer traction units were employed but they were kept on the move throughout a greater proportion of the shift. This, of course, necessitated longer hauls for some of the gathering locomotives and more frequent and speedier trips for the main-line units.

The success of the plan adopted is perhaps best illustrated by a before-and-after comparison of results. During March of this year four main-line and twenty-four gathering locomotives hauled an average of 6,144 tons per day to the shaft bottom. In April, when the new plan was put into effect, and the number of main-line and gathering locomotives limited to two and twenty respectively, the average daily output was 6,122 tons. Thus the elimination of two main-line and four gathering locomotives resulted in a decrease of only 22 tons in the average daily output for April as against that of March.

Nor is this all, for the adoption of the improved plan released twenty haulage operatives from service. The elimination of four gathering and two main-line locomotives of course relieved twelve men from duty as motormen and trip-riders. The installation of semi-automatic track switches and various signals dispensed with the services of three trappers. A readjustment of the methods employed in shifting loaded and empty cars at the foot of the main shaft eliminated two workers and the bottom boss. The changes made so systematized shaft-bottom methods that each worker now readily executes his duties without direct supervision. Lastly, simplification of the haulage system in general removed the necessity for the services of two tracklayer's helpers.

In order to appreciate the relation that the haulage system bears to other phases of the operation, an understanding of the layout and working conditions is essential. Entrance to the mine is gained by two shafts, each of which is about 600 ft. deep. The coal worked is the No. 6 bed of the Illinois series and ranges from 8 to 12 ft. in thickness. The mine cars are discharged underground by means of a two-car rotary dump and the coal is hoisted to the surface by 15-ton skips.

The bed in general dips somewhat to the northwest, but its regularity is broken locally by swags and hills which are encountered in all parts of the mine. Natural grades are fre-

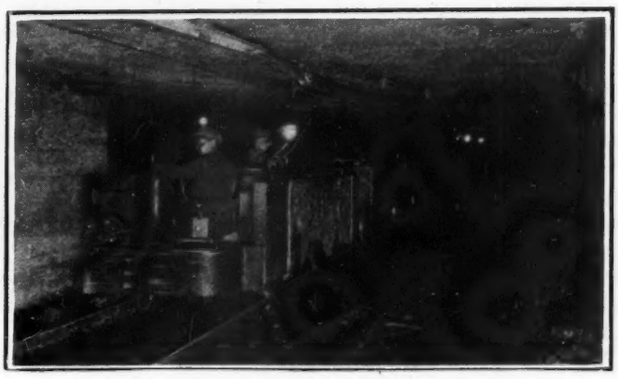


Fig. 1—One of the Main Haulage Units

This crew is proud of its enviable haulage record. Since April its average daily accomplishment has exceeded 3,000 tons, and has frequently amounted to as much as 3,500 tons. This 15-ton locomotive is equipped with two over-size motors and hauls trips averaging 35 cars each over a distance of nearly a mile, with an average prevailing grade of approximately one per cent against the loads.

In the headpiece may be seen the surface works of the Valier mine. The main tipple is in the left background, the auxiliary tipple in the center, and the fan, office and lamp-house appear at the right. The grade of the railroad tracks is to the southward or toward the camera.

quently heavy and much rock must be handled in order to reduce them. On the Main West haulway a 13-ft. cut was made in order to reduce a natural inclination of 15 per cent. Even though much top and bottom has been taken, track grades of 3 per cent in favor of and against the loads occur at a number of points on the main haulways. Cross and panel entries are much affected by grades both up and down and few of the gathering hauls are on level track.

The layout consists essentially of panels projected at right angles to the cross entries, these latter passages being protected by 150-ft. barriers. On each side of the panel entries eighteen 250-ft. rooms are turned on 50-ft. centers. These are started narrow and widened out in steps from crosscut to crosscut. Thus a room is 18 ft. wide from the entry to the first crosscut, 24 ft. wide from the first to the second crosscut and beyond this point the width is increased as much as the roof will allow. All of the 36 rooms constituting a panel are driven up simultaneously.

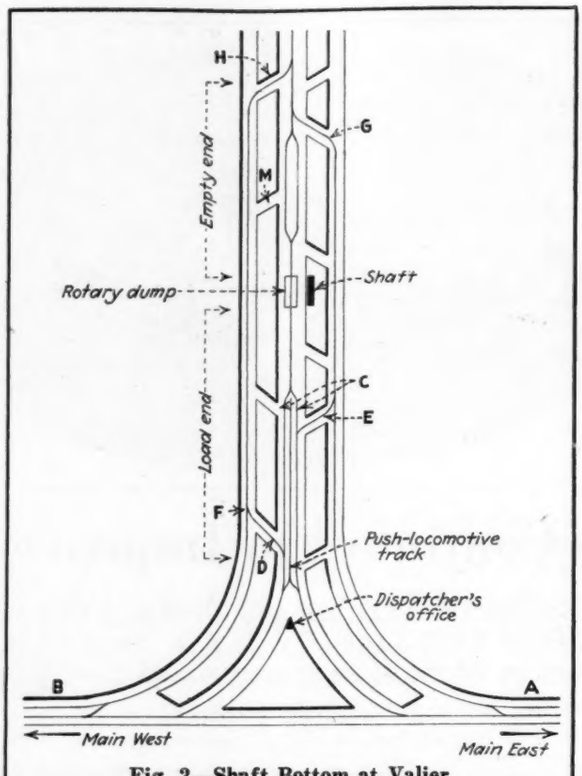


Fig. 2—Shaft Bottom at Valier

On this bottom each man so thoroughly understands his duties that no verbal instructions are necessary and consequently no bottom boss is employed. The bottom is considered a major portion of the haulage system and is positively controlled by electrical signals manipulated by the dispatcher. Interference between incoming trips from opposite sides of the mine has been entirely obviated.

On all primary haulways, such as main and cross entries, the track is laid with 56-lb. rails. All switches in these entries are of this weight and the heavy rails are laid in the panel entries as far as the first room, beyond which, and in the rooms themselves, 30-lb. rails are used.

Most of the output is hauled from three partings on the east side of the mine and three on the west side. These are reached from the shaft bottom by the Main East and the Main West haulways respectively, and each group is served by one main-line locomotive. Either of these machines makes an occasional trip to the workings flanking the Main North and the Main South entries, where mining activity has been temporarily curtailed. The arrangement is such that each of the two locomotives has a clear track at all times, both toward and away from the hoisting shaft. When a gathering locomotive has occasion to traverse a main-line track, it follows close behind the main-line locomotive, after waiting at a junction until that machine has passed that point traveling in the desired direction.

Net loading on each mine car averages about 4½ tons. Each of the two main-line locomotives hauls trips of thirty to forty-five cars from the main partings to the shaft bottom. In 8 hours each of the two main units thus hauls from 3,000 to 3,500 tons over an average distance of nearly a mile. The west side of the mine is served by a 15-ton locomotive equipped with two over-size motors, each of which has a capacity of 120 hp. Ordinarily, motors of this size are installed on 20-ton locomotives, and although these over-size power units increase the drawbar pull of the 15-ton locomotive only in the proportion to which they add to its gross weight, they provide so large a factor of safety against overload that electrical troubles rarely develop. The grades on the Main East haulway are heavier than those on the Main West and consequently a bigger locomotive is required. Since 56-lb. rails will hardly stand a load greater than that imposed by a 15-ton locomotive, the Main East haulway is served by two 10-ton locomotives in tandem, thus forming practically a single articulated unit.

In view of the vast improvement in haulage realized almost overnight in this mine through a careful rearrangement of methods, those factors that contributed to the general success of the plan are well worth considering. The goal toward which all changes were aimed, as already mentioned, was the elimination of delays. Such hindrances fell into three general groups, first, those occurring at the shaft bottom, second, those on the main line and, third, those encountered at the partings and in the adjacent working places. It was desirable to eliminate delays in one group or those occurring at one point independently of and without regard to those in another group or transpiring in some other locality. After all such delays had been eradicated one man—a dispatcher—could easily control the entire system by telephone and signals. This was the general procedure followed at Valier.

In an article entitled "Reconditioning Cuts Valier Mine Costs," in the Nov. 5, 1925, issue of *Coal Age*,

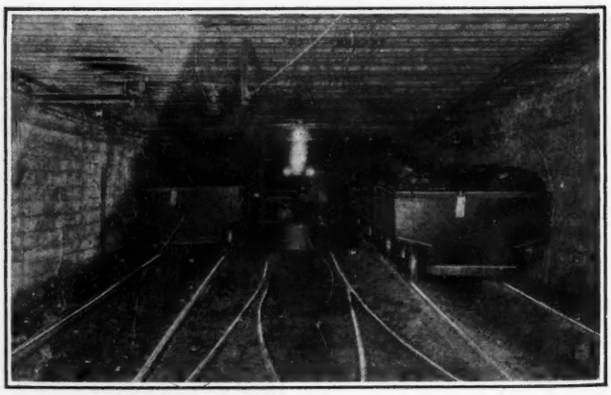


Fig. 3—Loaded Side of Bottom Looking Toward Shaft

The main east and west loaded tracks are here shown at the right and left respectively. Trips are fed to the rotary dump by means of the 10-ton "push" locomotive, running on a track between the two load tracks. On top of this locomotive is a bar that can be racked to either side so as to engage either trip. On the rear end gate of the last car in each trip is hung a white tail-marker. In case the tail light fails, this marker may be seen for a long distance when illuminated by a locomotive headlight.

Frank H. Kneeland described a number of changes that had been made up to that time in the shaft-bottom layout. During the current year several other alterations have been made in the arrangement of this bottom. For the sake of completeness and in order to afford a better understanding of the haulage system as a whole, the method now being followed in handling trips at the shaft bottom, particularly those details which have to do with the signaling systems, will be here described.

The main shaft bottom is shown in Fig. 2. It consists of three entries, the outer two being used as runarounds arranged for the storage and making up of empty trips. As only two main-line locomotives are employed, each of which serves a different section of the mine over individual tracks, which converge to a junction just outside the shaft bottom proper, neither interferes with the other at any time. Each main division of the mine, that is, the Main East and the Main West sides, is assigned a load-storage track on the shaft bottom. A trip of loads is fed to the rotary dump by a 10-ton "push" locomotive on a track located between the two load tracks. The entire arrangement is illustrated in Fig. 2.

Movements of the two locomotives are controlled entirely by signals which in turn are manipulated by a dispatcher stationed in an office at the main junction. His position is such that he has a clear view of the big bottom from the loaded side as far as the rotary dump. Before him is a telephone switchboard, bearing a number of signal switches and verifying lights by means of which he controls all traffic.

From the time the Main East or the Main West locomotive, inbound with a loaded trip, reaches *A* or *B*, as the case may be, until it is moving outbound with a trip of empties from the runaround, all of its movements are positively governed by signals. Furthermore, automatic switching is utilized wherever possible to facilitate these movements.

Thus, on arriving at *A* or *B* an incoming trip is confronted by either a red or a green signal light. If the signal shows green the trip continues on its way into the shaft bottom; but if it shows red it must wait at this point until the green light appears. This signal is regulated by the number of cars standing on the loaded track assigned to that side of the mine. On each loaded track at *C* is an electric switch, operated by the wheels of the mine cars, which regulates the circuit of these signal lights. So long as any cars stand on this switch the signal at *A* or *B* burns red. After the last car in any trip clears this switch a green light appears at *A* or *B*, signifying that the loaded track from which this "come-ahead" signal is given will accommodate an incoming trip.

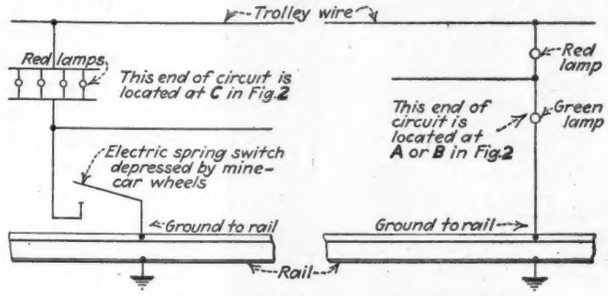

Trolley wire
Red lamps
This end of circuit is located at C in Fig. 2
Red lamp
This end of circuit is located at A or B in Fig. 2
Green lamp
Electric spring switch depressed by mine-car wheels
Ground to rail
Ground to rail
Rail

Fig. 4—Automatic Signal on Shaft Bottom

The spring switch at the left is depressed by the mine-car wheels so that as long as this switch is closed a red light in the circuit, located near the bottom entrance, burns, blocking incoming trips. When the particular track in which this switch is located is sufficiently cleared of loads to accommodate another trip, this spring rises and the signal light changes from red to green, showing that if another string of loads is waiting it may enter the bottom.

A diagram of this signal system is shown in Fig. 4. While the switch is held closed by the wheels of a mine car the green light is shorted out and all red lights burn brightly. But when the switch is open the four red lights in multiple are in series with the green. Consequently the green light shows bright while the red lights burn only dimly.

In the event that a main-line motor is blocked by a red light at *A* or *B*, the knowledge of its presence at either of these points is transmitted to the men in attendance at the shaft bottom by four green signal lamps in a simple circuit. Of course an individual circuit is provided for each side of the mine. The switches controlling these circuits are located at *A* and *B* and are actuated in the same manner as that shown in Fig. 4. Of the four green lamps in each circuit, one is located in the dispatcher's office, one is installed in the weigh office, the third is in view of the man who feeds loaded cars to the rotary dump by means of the "push" locomotive, and the last is so placed that it may be seen by the empty-car coupler.

By showing which incoming trip is waiting for entrance to the bottom, these lamps determine which loaded track should be cleared of mine cars first. The two green lamps in the weigh office, one for each circuit, indicate to the weighmen when conditions are suitable for hoisting individual mine-car loads of coal for inspection and docking purposes. This is generally done when no incoming trip is waiting for entrance into the bottom.

On entering the shaft bottom the locomotive from the Main West side is cut loose from its trip and makes a flying switch through the shoofly at *D*

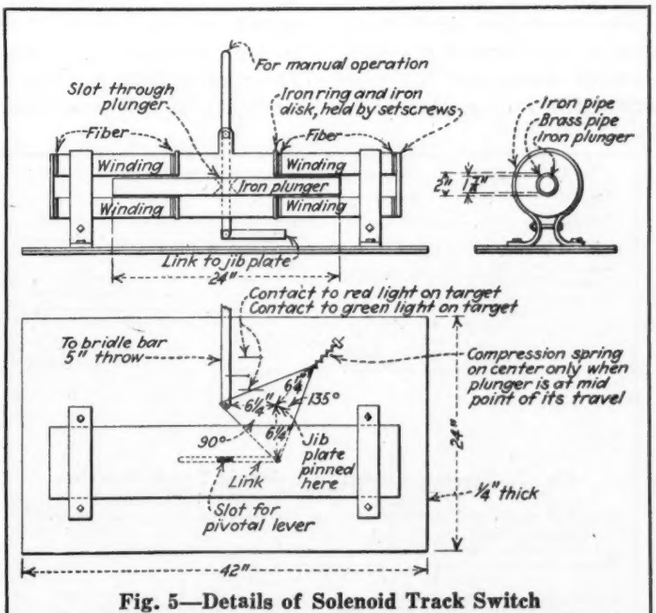


Fig. 5—Details of Solenoid Track Switch

The solenoid consists of two spools wound with magnet wire within which floats an iron core or plunger. A pivotal lever passes through an apexed slot in this plunger and is thrown to right or left in accordance with the magnetic pull exerted on the core. Through a link and triangular plate this motion is transmitted to the switch points.

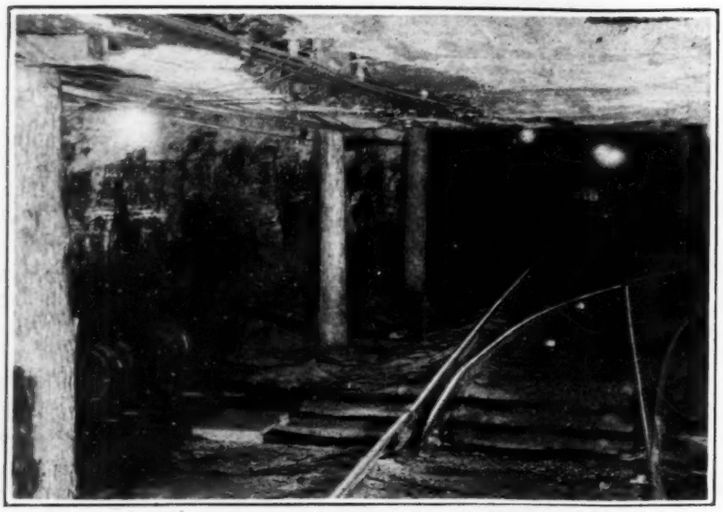


Fig. 6—Electrically Controlled Track Switch

This is the switch leading to the main west runaround on the empty end of the shaft bottom. It greatly facilitates the work of the locomotive driver who pulls empties from the rotary dump and spots them in either of the runarounds. Note that three trolley wires are hung close together on this entry. The outer left trolley is a part of the track-switch circuit for the main east runaround. The outer right wire is in a similar circuit for the main west runaround. The remaining conductor is, of course, the trolley used on the straight track.

in Fig. 2. The motorman then couples onto an empty trip in the runaround and waits for a "go-ahead" signal, which is transmitted to him by the dispatcher. The flying switch is made without danger because the track switch is pneumatically operated and manually controlled by overhead levers which are thrown by the motorman as he passes under them. The Main East locomotive reaches the runaround assigned to it by passing through the shoofly at *E*. However, it does not make a flying switch because the track grade is so heavy on that side that the locomotive must be utilized to bring the trip of loads to a standstill.

Upon arriving in the Main West runaround for an empty trip, the motorman on the Main West locomotive throws an overhead electric switch at *F* (Fig. 2) installed in another signal circuit. This includes three lamps which inform the dispatcher and the empty-car coupler of the presence of this locomotive in this runaround. One lamp is installed in the dispatcher's office, another is hung near the rotary dump and the third is located at *G* or the backswitch to the Main East runaround. The last-mentioned lamp is intended to convey the signal to the car coupler when he is making up an empty trip on that side. He accordingly immediately transfers his activity to the runaround in which the waiting locomotive is located. Knowledge of the presence of the Main East locomotive in its runaround is transmitted by a similar signal circuit.

Having coupled his locomotive to a string of empties in the runaround, the motorman "stands by" until the dispatcher informs him where" and "when" he is to go. This also is accomplished by a signal circuit from the dispatcher's office to the runaround. Directly in front of the waiting empty trip in this passage are a red, a white and a green light. The lighting of any one of these three lamps is a "go-ahead" signal while its color shows the destination of the trip.

As already indicated, trips of loads are fed to the rotary dump by a 10-ton locomotive on a track of its own located midway between the two loaded tracks. This machine is provided with a push bar which can be racked out to engage a trip on either side of it.

As empty cars in twos emerge from the rotary dump they are made up into trips of tens, twelves and fourteens on the main entry of the shaft bottom. These trips are coupled to an 8-ton locomotive which pulls them in the clear of, and backswitches them through, the shoofly either at *H* or *G* (Fig. 2) to the runaround where they are combined into larger trips. Only one man is required to couple the cars into trips and to operate the switching locomotive. Both of these jobs can be performed by this one man because the switching is greatly facilitated by semi-automatic, electrical track switches at the shooflies *G* and *H*.

These shoofly switches are of the solenoid type, shown in detail in Fig. 5. The solenoid consists of a 5-in. iron pipe, 36 in. long, which is held by peripheral straps to an iron baseplate. This plate measures 42x24x¼ in. and is spiked to cross-ties. In the center of this pipe and extending inward from the ends are two 1¾-in. brass tubes, 13 in. long. These are supported at either end by two ½-in. fiber rings or washers in such a manner as to form a spool. Each spool is held in a fixed position by an iron disk on its outer and an iron ring on its inner end, these being fastened to the inclosing pipe by setscrews. An 8-in. gap is left between the inner ends of the two spools. A sufficient number of turns of No. 10 double-cotton-covered magnet wire is wound on each spool to provide a pull of 100 lb. on an iron plunger 24 in. long which floats within them. The magnet wire is insulated from the brass tubes by a wrapping of fish paper and varnished cambric.

Through an apexed slot in the iron core or plunger, and through two corresponding slots in the iron casing, is passed a pivotal lever. This is connected through a link to a jib plate, which in turn is connected to the bridle bar of the switch through an intermediate link. The jib plate is so designed that a 5-in. displacement of the plunger imparts a 5-in. throw to the switch points. The switch is held in an open or closed position by a compression spring and may be manually operated by the pivotal lever in case of a failure of

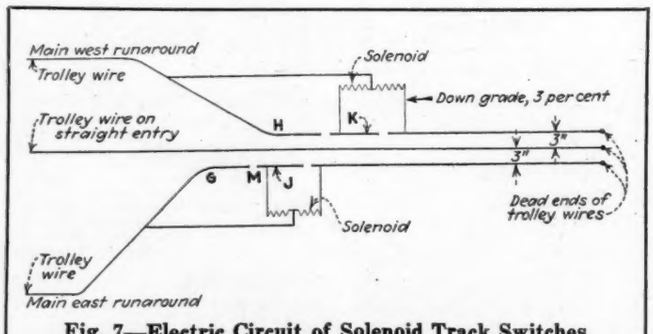


Fig. 7—Electric Circuit of Solenoid Track Switches

Operation of this circuit is as follows: A locomotive pulls empties upgrade until they clear the shoofly *G*, drawing current meanwhile from the middle trolley wire. On the backward trip the motorman sets the trolley wheel on the side trolley wire and opens the controller. This energizes the solenoid and lines the track switch for the main east runaround. The trip is started backward on a grade of 3 per cent with the controller open, but coasts over the insulated section at *J* with the controller closed. It is again opened after the trolley wheel has passed the dead block at *M*. The locomotive is thus furnished power to place the empties in the runaround while simultaneously the solenoid is energized, reversing the track switch to the straight entry track so that the locomotive pulls out light without loss of time.

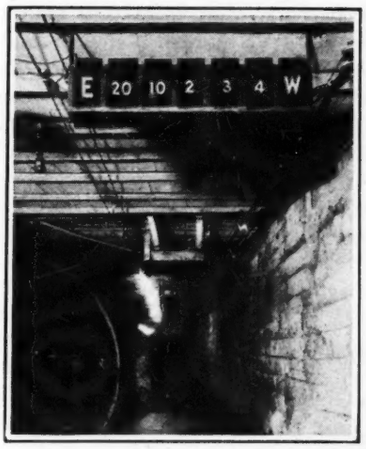


Fig. 8—Empty Trip Makeup Signal Box

This signal is controlled from the dispatcher's office. The numerals and letters are illuminated in combinations that indicate the number of cars to be made up into a trip and which runaround this trip should be in. The box is located at the empty end of the rotary dump.

the electrical equipment. An actual installation of this switch is seen in Fig. 6.

Fig. 7 is a diagram of the circuit by which solenoids of this kind as installed at *G* and *H* in Fig. 2 are controlled. At these points, it will be remembered, they are used to facilitate the shifting of empty cars to the runarounds by the switching locomotive. Each solenoid switch is bridged across a trolley wire in a circuit of its own. When a trip of empties is being pulled from the rotary dump, the trolley pole of the switching locomotive makes a contact with the middle trolley wire until the trip is in the clear of either *G* or *H*. Then, depending upon whether the trip is being pushed into the Main East or the Main West runaround, the motorman transfers the pole to the right-hand or the left-hand outside trolley wire.

By opening the controller with the pole in this position the solenoid is energized and the track switch lined for travel through the shoofly at *G* or *H*. After the trip is put into backward motion, on a downgrade of 3 per cent, and before the pole reaches the insulated section of the trolley wire (at *J* on the Main East side and at *K* on the Main West side), the controller is closed. It is kept in this position until the trolley wheel has passed over the insulated section, after which it is again opened. As a consequence, the solenoid switch is energized in a reverse direction and thereby lines the track switch for the straight track of the main entry. After placing the empties the switching locomotive is enabled to return to the straight entry without interruption.

The dispatcher uses an electrically operated numeral signal box in transmitting information to the empty-car coupler as to the number of empties needed in the trips being made up. This signal box is located near the empty end of the rotary dump, as illustrated in Fig. 8. It consists of seven compartments, in each of which is placed a 50-watt lamp. Each lamp is connected in series with a small pilot lamp in the dispatcher's office, in a master multiple circuit of which Fig. 9 is a diagram. Electric cap lamp bulbs are utilized as the pilot lights. As each series circuit is controlled by an individual key switch, as many lamps as desired can be lit simultaneously. The key switches and pilot lamps are mounted on a small panel that rests on the telephone switchboard in the dispatcher's office, as shown in Fig. 9.

Referring again to Fig. 8, each compartment of the signal box is fitted with a glass window on which is either a letter or a numeral. When the compartment marked *E* is lighted the coupler is informed that an empty trip is required for the east side of the mine. The number of cars needed in it is designated by a combination of the numerals in the five inside compartments, and is determined by adding them together. Thus if the compartments marked *W*, 20, 10 and 3 were illuminated, the coupler would make up a trip of 33 cars in the Main West runaround. Having complied with this order he would put out the lamps in the signal box by throwing a single-pole, double-throw switch to a dead wire as at *A* in Fig. 9. When the lamps in the signal box go out, so do the pilot lamps in the dispatcher's office, which are connected in series with them. This is a signal to the dispatcher that the trip has been made up in accordance with his instructions.

The Main West section is served by five gather-

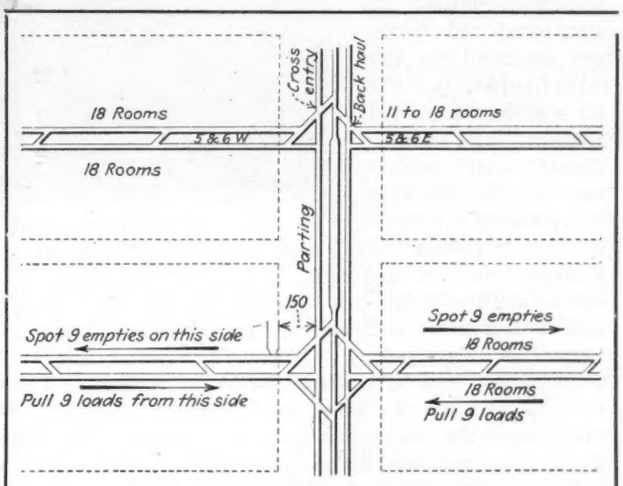


Fig. 10—Proposed Parting Layout

In future all new partings in the Valier mine will be made large enough to accommodate 36 loads and an equal number of empties. Such partings will be located on a cross-entry in the center of a group of four panels. Because of the short haul which this layout entails it is hoped that the daily duty of a gathering locomotive can be more than doubled.

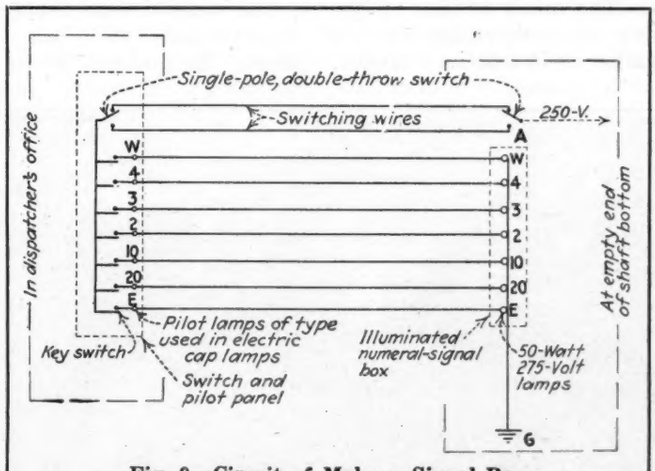


Fig. 9—Circuit of Makeup Signal Box

This master multiple circuit is composed of seven individual series circuits. The master circuit is opened or closed by either of two single-pole double-throw switches, one in the dispatcher's office and the other located near the signal box. In each of the component series circuits is a 50-watt lamp located in the signal box and a small pilot lamp mounted in the dispatcher's office. The individual secondary circuits are controlled by key switches from the dispatcher's office. When the car coupler has made up a trip in accordance with orders signalled to him by this box, he throws the switch at *A*, thus breaking the primary circuit. All lights are thus extinguished, indicating to the dispatcher that a trip of entries has been coupled up as per his directions.

ing locomotives which haul to one parting. As these run on a common track covering a stretch of ¾-mi., block signals are provided. At each junction on the main haulway is installed a red lamp, and about 100 ft. back from the main haulway on each cross-entry a similar light is also installed. The latter warns the motorman, as he approaches the junction, as to whether the main haulway is clear or blocked. A sufficient number of additional red lamps are installed on the main haulway to make all visible, one from another, and consequently any motorman in the block is immediately warned of danger should the signals fail. In the circuit are two single-pole, double-throw and four double-pole, double-throw switches. Alternately, all lamps go off and on with each change in the position of any switch. In every case the motorman who first reaches the block when it is clear has the right of way.

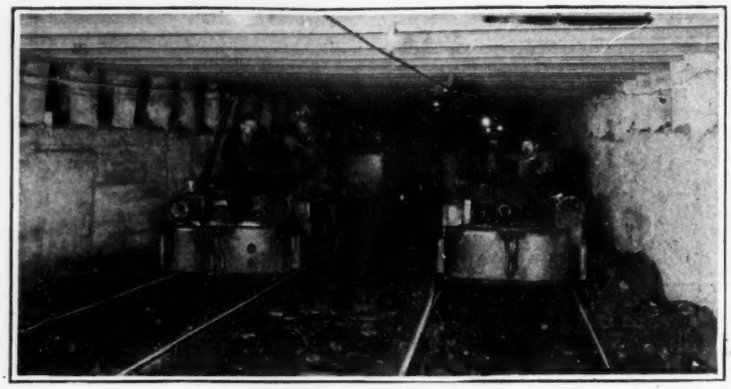


Fig. 11—First Southwest Parting

Each of the two tracks comprising this parting is about 600 ft. long; they are connected by two crossovers and are open at both ends. Each of the two locomotives here shown weighs 8 tons and gathers approximately 70 cars per shift over a maximum haul of 3,000 ft. The concrete walls and steel timbering denote that this parting is on a primary haulway. All partings within the mine are as well lighted as this one.

Valier mine as a whole is served by 20 gathering locomotives. Eighteen of these are of the cable-reel type and two are combination storage-battery and trolley units. The storage-battery locomotives have given as good results as the reel type in this mine although they are operated two shifts each day. They are used chiefly in "squeeze" territory, where gas is most liable to accumulate. The management attributes the excellent service which they render to the ample care that has been bestowed upon them.

The maximum haul of the majority of the gathering locomotives is about 3,000 ft., although several units traverse greater distances. The heavy grades on the cross-entries have a tendency to cut down the average number of cars hauled by a gathering locomotive in a shift. With fairly level track these machines average 100 to 110 cars per day. This is the duty maintained by several of these machines where the grades are easy. An average of 70 cars, or about 315 tons, per gathering locomotive per shift has been maintained over a long period. This record, however, is being substantially improved.

Fig. 12—Electrically Lighted Switch Targets

Main turnouts are all well lighted and the position of the track switches is indicated by electrically lighted railway targets. The two lamps on the post in the center, at the point of the turnout pillar, constitute a block signal, by means of which movement of trips to the bottom is controlled.

The management of the Valier mine is not so vain as to believe that all its practices are exactly right. Although it has had good results in gathering, it is now taking steps toward improvement by changing its practice with regard to the location of the sidetracks. In the past partings were located at points such that each could serve a large number of panels. In consequence all partings have been large. The new plan is to construct a parting for every four panels and whatever development work is being done ahead of them.

In the proposed plan a two-track parting, large enough to accommodate thirty-six loaded and an equal number of empty cars, is to be located on the cross-entry as indicated in Fig. 10. Since the practice is to drive up all of the 36 rooms in a panel simultaneously each parting will serve 144 rooms in the four panels. The management believes that two locomotives can adequately gather and distribute cars in this territory. Incidentally, it is also of the opinion that four cutting machines would be sufficient for the rooms in a section of this size. Assuming an average output of only two cars or 9 tons per loader per day, each locomotive would haul 650 tons per shift. With the room hauls as short as they would be in this case each locomotive might also be expected to gather some additional coal from nearby entry faces.

In accordance with the custom in Illinois two men are assigned to adjoining rooms, which they jointly work alternately. Since no more than eighteen rooms in a panel are worked at any one time, only eighteen cars need be handled at each round trip of a locomotive, that is, nine loads and as many empties. The main-line locomotive would bring 36 empty cars to the parting at each trip and take away an equal number of loads.

The company has begun the installation of partings in accordance with this plan. It hopes to approach closely the goal set by its theoretical computation because the workings will thereby be concentrated and the hauls short. The scheme will provide greater safety and may be the means of increasing the output per loader per shift to three cars because of closer supervision and the setting up of other favorable conditions.

Five-hundred 50-watt lamps are installed along the main haulways in the Valier mine. The average distance between lamps is about 500 ft. However, they are not located with any great regularity but are placed wherever they are most needed. At least one lamp is placed in each

swag as a means of making any car or cars which might break away from a trip and come to rest at such points easily visible. Turnouts on the main haulways are similarly illuminated. They are used in large numbers along stretches of closely timbered roof and double

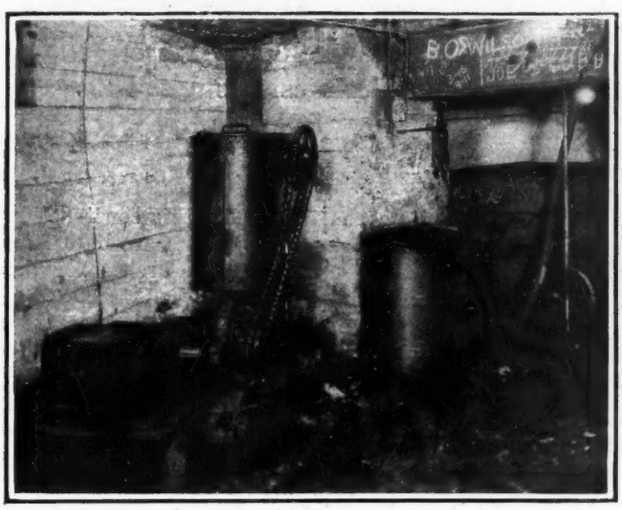


Fig. 13—Mine-Car Greasing Station

Cars requiring lubrication are shunted to a track beside this station as they come from the rotary dump. Here an electrically operated grease gun greatly facilitates the operation of applying lubricant. By the aid of this machine a car can be completely greased in about 6 min.

track. Partings are all well lighted, as may be judged from Fig. 11. At every important turnout an electrically lighted target is installed in conjunction with the track switch. This feature, as well as the light-reflecting power of rock dust when applied in ample quantity, is illustrated in Fig. 12.

One electrician devotes all his time to the repair and extension of light and telephone circuits. In this mine twenty-four telephones are installed. An instrument is placed in each underground office, shop and at each parting. Every parting is managed by a man who might be described as a lieutenant to the dispatcher. One of this man's duties is to telephone the dispatcher upon every arrival of a gathering locomotive, telling him how many loads and empties are standing on the parting.

Rubber and double-braid covered No. 14 iron wire is used in all the underground telephone circuits. Iron wire is used for this purpose because it possesses a tensile strength several times that of copper and consequently is less likely to be broken by roof falls.

Location of Trouble-Finder in Wire Room

A telephone trouble-finder is located in the underground wire room. It consists of a millivolt meter mounted on a panel which is so arranged that all lines can be tested from this one point for short-circuits, open circuits, grounds and foreign sources of current. After a line is first installed and made absolutely clear, a voltage reading is taken and this is recorded as being the constant or characteristic of that particular line under normal conditions of operation. Any variation from this reading assists in determining the nature and source of the trouble.

All rails on the main haulways are joined electrically by arc-welded bonds. These are tested periodically and must meet the requirement that the resistance of any one shall not exceed the normal resistance of 10 ft. of rail. Room-panel circuits are provided with a 2/0 bare copper return.

Fig. 13 shows the mine-car greasing station and its portal, located on the empty end of the big bottom, in the crosscut marked *M* in Fig. 2. The new bottom layout is such that only one of the two tracks on the straight entry is needed for the storage of empties. Cars in need of grease are shunted to this track as they emerge from the rotary dump. As illustrated in Fig. 13, greasing is done by an electrically operated machine. In it the grease is put under heavy pressure by a plunger. When the nozzle through which grease is applied to the car wheels is closed, the lubricant is bypassed to the container which has a capacity of ½ bbl. Grease is fed from this container downward to the plunger by a vertical screw. Mine cars are greased at the average rate of one wheel in 1½ min.

Helium Actively Smothers Methane Flame

In the course of experiments at the Pittsburgh, Pa., station of the Bureau of Mines to determine the manner and speed in which flames of methane are propagated, helium has been proved to be more extinctive of methane flames than argon. The experiments were conducted in the course of an investigation on the influence of blackdamp on the limits of flammability of firedamp in air. Volume for volume, carbon dioxide exceeds nitrogen in its extinctive action on flame, an effect which is generally attributed to the higher molecular heat capacity of the former. Argon, a gas of lesser heat capacity than either, proved to have less extinctive action.

From a detailed consideration of the physical differences between the two gases, helium and argon, the Bureau of Mines ascribes the superior extinctive action of helium to its greater thermal conductivity, which is more than eight times that of argon at laboratory temperatures. It seems highly probable that the thermal conductivity of a gas mixed with helium will be greater than that of a corresponding mixture with argon, and that this will be true at the somewhat high temperatures of the flames in limit mixtures.

At first sight it is surprising that the higher thermal conductivity of helium should be responsible for its greater extinctive action, but if the propagation of flame is due to conduction of heat, then at either zero or infinite values of the thermal conductivities, flame would not be propagated. Between the two values, zero and infinity, an optimum value for the conductivity must lie; so it is evident that the higher conductivity of the helium mixtures may well be less favorable to flame propagation in limit mixtures than the lower conductivity of the argon mixtures.

Detailed information in regard to this work is contained in Serial 2757, "Extinction of methane flames by helium," by H. F. Coward and G. W. Jones, copies of which may be obtained from the Bureau of Mines, Department of Commerce, Washington, D. C.

DURING 1925, according to Paul C. Redington, of the U. S. Forestry Service, there were 85,762 forest fires in the continental United States (exclusive of Alaska). Those burned over an area of more than 26,000,000 acres and caused an estimated damage exceeding $28,000,000. Both the number of fires and the losses sustained were materially lower in 1925 than in 1924. Greater educational efforts and increased effectiveness of the fire-control organizations are chiefly responsible although in part this is due to a somewhat more favorable season during 1925, it being considered an average fire year.

Nemacolin, Though Fully Electrified and Gassy, Is Safeguarded Against Explosion*

Ample Ventilation Provided at Last Cross-Cut—Multiple Drive Is Installed on Fan—All Working Places Are Carefully Sprinkled Before Shooting—Holes Sunk with Pneumatic Augers and Permissibles Used

By W. Z. Price
Assistant Superintendent, Buckeye Coal Co., Nemacolin, Pa.

THE COAL LAND holdings of the Buckeye Coal Co., of Nemacolin, Pa., embrace over 8,400 acres. They lie roughly in an oblong with the eastern edge along the Monongahela River. There are, in reality, two separate mines with a 150-ft. barrier pillar between them. This is, however, cut through occasionally for haulage. The North mine, as well as the South one, is fed from seven main entries, a loaded track an empty, a manway and four return air courses. The loaded tracks converge at the shaft bottom, but the empty roads maintain their identity throughout their length. With three intakes and four returns on either side, ample room has been allowed for expansion of air and every facility has been provided for ventilation.

The four south air courses converge to two crossing the shaft bottom, and then to one at the south side of the air shaft. Similarly, the four northern air courses unite in one at the west side of the same shaft. This convergence is accomplished by concrete arched entries which proportionally increase in size as additional air is supplied them.

A standard minimum of 20,000 cu.ft. of air per minute is maintained in each split and more where required. This is not the amount of air entering a split but that passing the last open cross-cut in each section. Twelve such splits are now in circulation and two additional ones must be added before the end of 1926. This is a gaseous mine that has been thoroughly electrified and it is believed that ample ventilation is the first rule of safety and the first maxim of mining efficiency. The quantity of air traveling is checked constantly by the mine foreman and his assistants as well as by the safety inspector.

Fig. 1—Nemacolin and Surroundings

Although the mining property of the Buckeye Coal Co. is, in general, rectangular in shape, it is highly irregular in detail. The Lambert syncline crosses the property from the northeast. Along the eastern side also, this property fronts on the Monongahela River.

Large volumes of air can only be maintained by proper stoppings and to this end, permanent walls of paving brick have been erected in the cross-cuts between the intake and return in all splits. These walls are of single brick with a pilaster a foot square in the center. By experiment it has been found that this construction is both economical and sound. Overcasts are built in a similar manner with I-beams and jack-arches for the floor and brick walls for abuttments.

All working places in virgin coal are ventilated by line brattice. The area behind the brattice is held to a minimum of 12 sq.ft. and the volume of air traveling to at least 2,000 cu.ft. per minute. Temporary brick stoppings in room headings are laid with line mortar and all joints made as nearly air tight as possible. On all room headings the air is checked by means of curtains, heavy, noninflammable jute cloth being used.

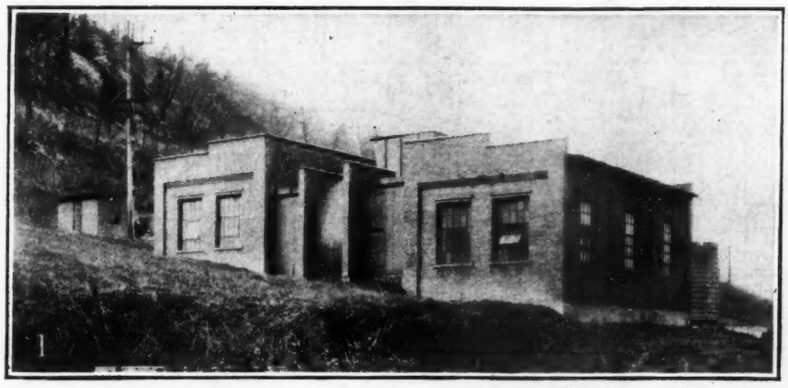
The fan is driven by either of two units. When it stops for any reason, a gong in the power house automatically rings, notifying the power plant engineer of its stoppage. He immediately proceeds to the fan, starts it with the alternate drive, and operation proceeds. In case the stop has been due to failure of the purchased power supply, he immediately cuts off all power to the mine and notifies the mine foreman. He then starts the two 300 hp. gas engines in the power room. These are directly connected to a 400 hp. generator wired to the fan motors. Ventilation is thus reestablished. After starting this unit, he switches over to the second West Penn line (two sources of supply are provided) and if that is live, the gas engines can be stopped and the plant operated as before. However he keeps the underground management posted throughout all operations.

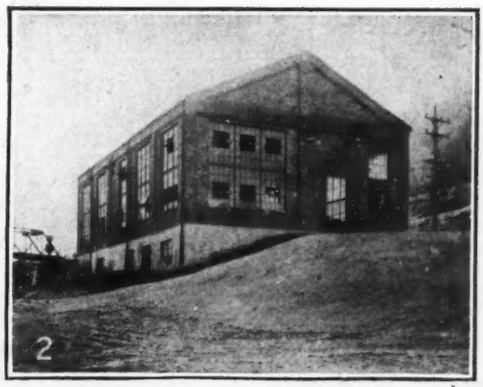
The emergency generating unit is tested daily and kept in proper condition. A private telephone line to the underground exchange enables the engineer to communicate with the mine foreman promptly at all times. In addition, a card on the switchboard constantly reminds the engineer of the proper procedure in case of emergency.

Coal is cut both by shortwall- and top-cutting machines. The latter are employed in development while the bulk of the butt and all room work falls to the former. Rooms and butts are driven on 100-ft. centers. The method pursued in drawing pillars is as follows:

*Abstract of first half of a paper entitled, "The Coal-Mining Plant of the Buckeye Coal Co.—Mine Operation," presented before the meeting of the American Institute of Mining and Metallurgical Engineers, Pittsburgh, Pa., Oct. 5 to 9, 1926. *Coal Age* expects to publish the rest of this paper shortly.

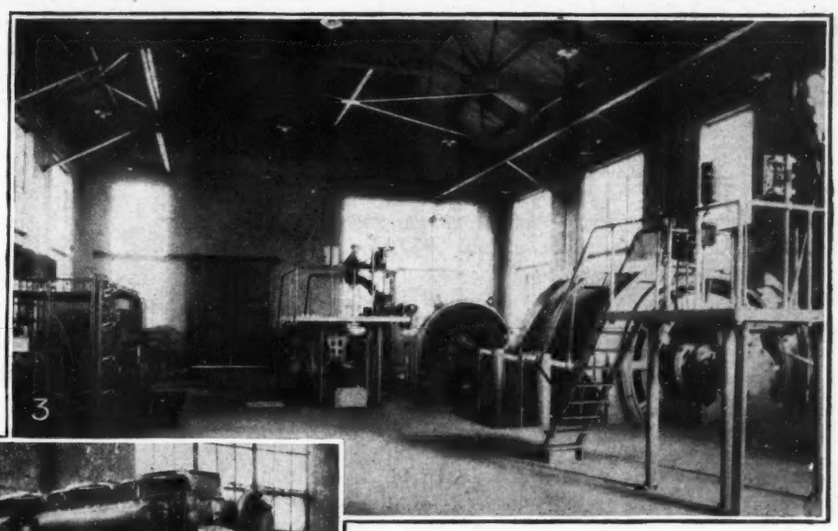
Some of Nemacolin's Surface Equipment



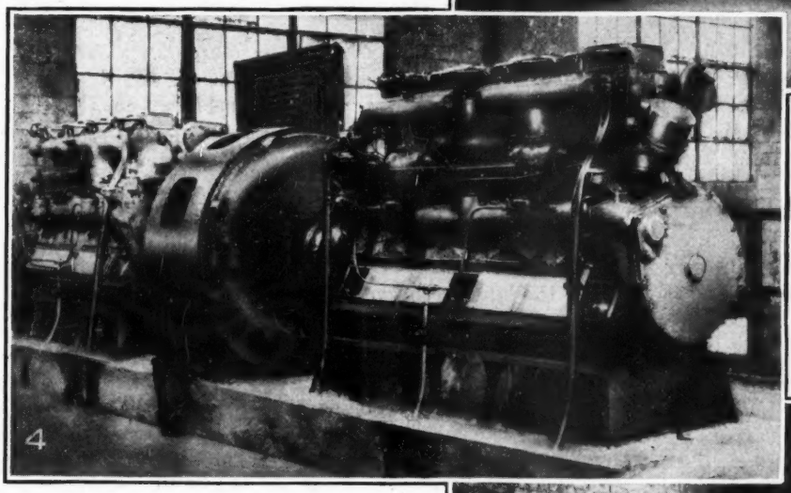


1. Fanhouse — Inasmuch as Nemacolin is a decidedly gassy mine no chances are taken of fan failure. Alternate drives are provided.

2. Exterior of Hoisthouse—The permanency and adequate lighting of this building are in keeping with the balance of the surface works.

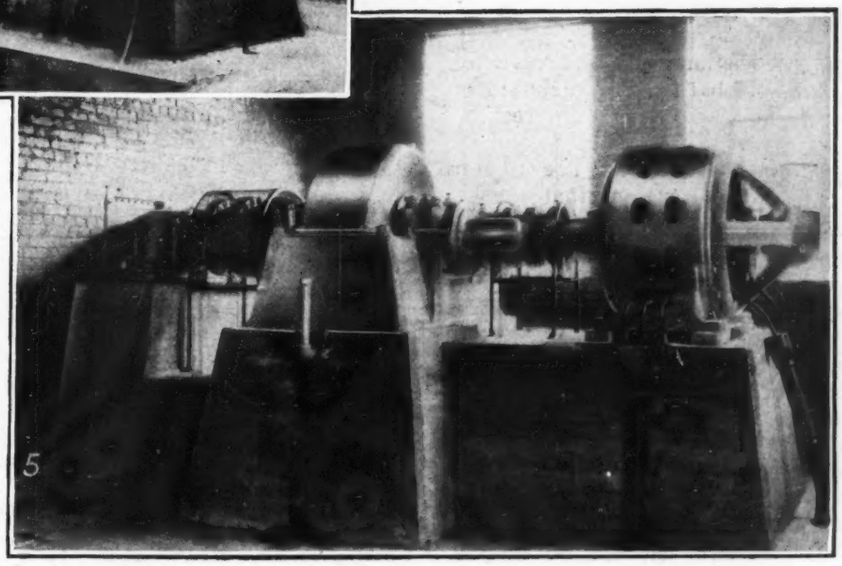


3. Interior of Hoisthouse—This shows chiefly the back-geared electric hoist and the operator's platform.



4. Emergency Generator—This generator is direct-connected on both ends to internal combustion engines. It furnishes a source of power for the fan drive in case the regular power supply fails.

5. Fan Motor and Reduction Gear—This is the drive normally used. It consists of motor and reduction gear together with two flexible couplings, thus forming a simple compact and reliable unit.



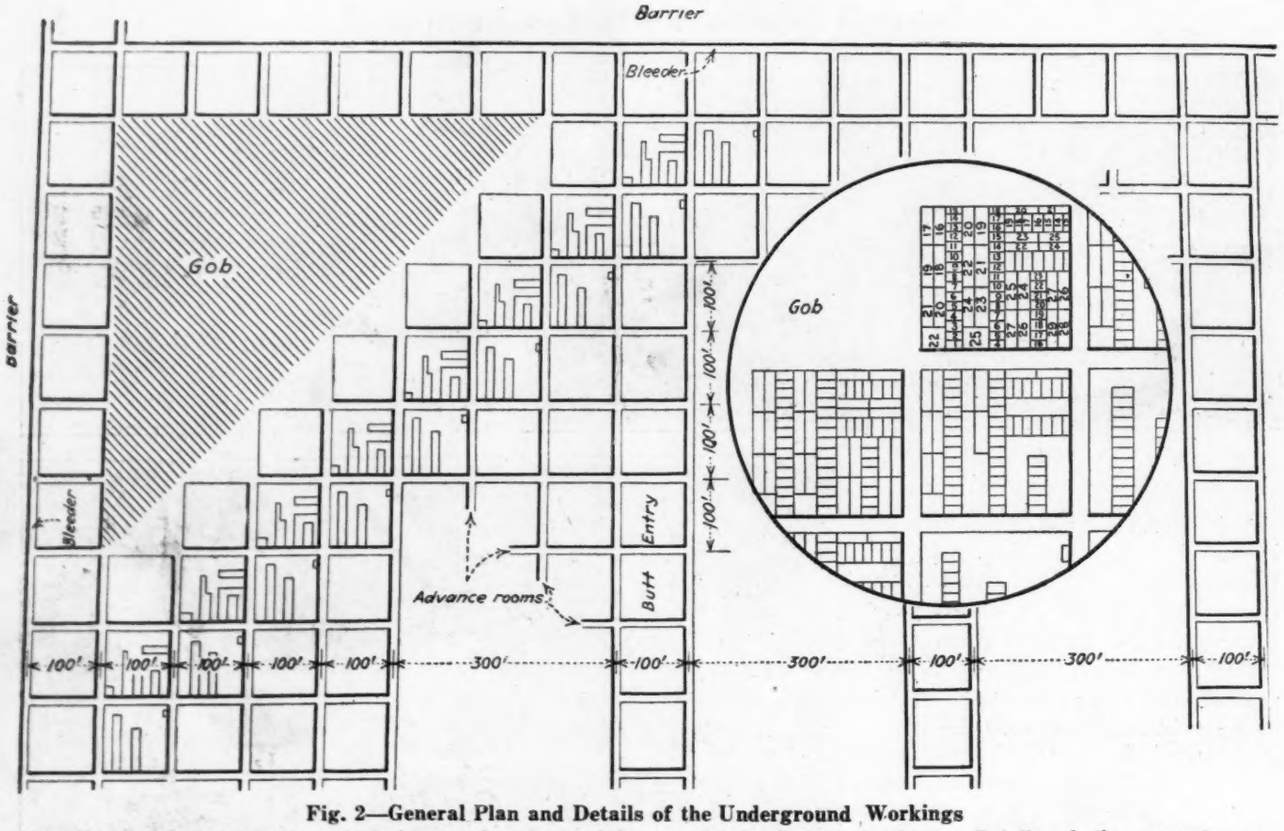


Fig. 2—General Plan and Details of the Underground Workings

It will be seen that development work consists in blocking the coal out into squares that are 100 ft. on a side. These are then removed by successive splitting. The break line is, of course, maintained at an angle of approximately 45 deg. to the headings. Details of the extraction are shown in the circular insert and concentration of operations is assured.

Rooms are not driven until they can be brought back immediately. This is varied occasionally where they are needed for haulage or ventilation, but otherwise there are no exceptions. This concentrated system enables practically all the coal to be recovered with maximum safety. The coal is cut, drilled and shot by company men. The drillers work in pairs using a portable air compressor. This is a self-propelled, explosion-proof machine approved by the U. S. Bureau of Mines. Rotary air drills with auger bits are used and 3 holes can be sunk in the face in five to six minutes. The shotfirer and his helper follow and shoot the coal by means of permissible powder and electric detonators. All explosives are taken underground in a car especially built for the purpose, the body being doubly insulated from the running gear and hitchings and mounted on a truck by spring suspension.

In shot firing, the places are first examined to see if they are well sprinkled, free from gas and the holes properly placed. After shooting, the shotfirer again tests for gas before proceeding to the next place. No one except shotfirers or persons designated by the mine foreman are allowed to have possession of an electric blasting battery or to fire any shot within the mine. All these batteries are checked in and out of the lamp house by the lampman in charge.

Where top-cutting machines are used, the track is extended to the face after each cut is loaded out. With the shortwall-machines, the loader lays up his track the first thing in the morning. Each loader cleans up his place every day.

Few haulage roads are driven with intersecting angles; curves are easily put in to conform readily to the trackwork. The engineering department furnishes the underground management with sketches of the curves to be put in and full details for the continuance of the sight lines.

No place is turned until sights are first given by the engineers; this includes cross-cuts. The latter in most cases are driven at regular 100-ft. intervals. The value of this practice is apparent when the mine map is being examined. Distances can be roughly "spelled" off by counting the cross-cuts and a uniformity is secured that is highly desirable.

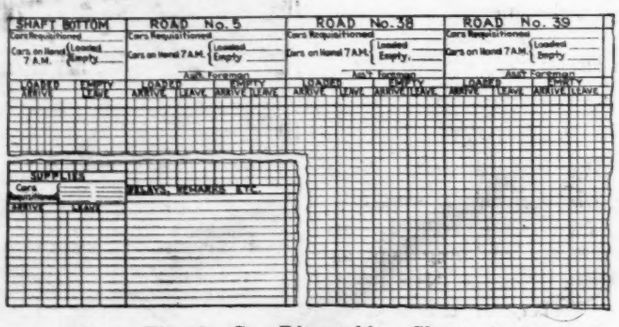


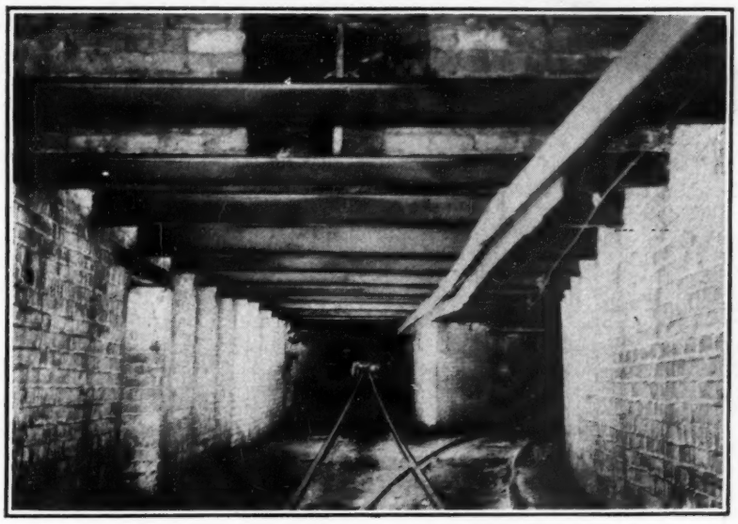
Fig. 3—Car Dispatching Sheet

In this mine dispatching is probably as carefully done as upon many railroads. There is this difference, however, that on the railroads the train is the unit considered whereas at Nemacolin it is the car. All movement of cars and trips are governed by telephonic instructions from the dispatcher's office and permanent records are kept. This tends to avoid errors and to put responsibility for any delays that may occur, where they justly belong.

Both the shortwall- and the top-cutting mining machines are equipped with water sprays. A ¼-in. pipe is fastened to the frame of the machine. This tapers to a jet that feeds onto the bits in the case of top cutters but on the shortwall machines, a horizontal perforated pipe throws a spray across the whole

width of the cutter bar. The water used averages 0.7 gal. per ton of coal cut.

Rock dusting is practiced on a large scale. Although only a few barriers have been erected all places where track is present have been thoroughly dusted. In air courses where the track has been removed the roof and ribs are coated for long distances, certainly far enough to suffice for scores of barriers. Two machines are used and the dust is blown on at the rate of 4 lb. per foot of entry or room (all are 12 ft. wide). The dust in all places is sampled periodically and the percentage of incombustible indicated on a map kept for this sole purpose.



Some of the Permanent Underground Construction

Brick is extensively used in underground work at Nemacolin. In this illustration, note the neatness of the construction and also the long radius of the curve to the right. The main trolley wire is carefully guarded with a board on either side. These, as well as the wire, are hung from the H-section roof supports.

Three sizes of rail are in use. The heaviest, 70 lb., is used on main haulage roads, 50 lb. for secondary tracks and 30 lb. for the butts and rooms. The first two sizes are classed as permanent track and are put down to grade and line with 6x8-in. ties on 2-ft. centers. The light rail, of course, is constantly being shifted and is laid on 4x6-in. ties. The 30-lb. rail is purchased in 15-ft. and 30-ft. lengths. The loader lays his own track and the shorter length is easier for him to handle. Standard, turnouts are prescribed for the various conditions encountered and are constructed under the supervision of the engineering department.

Haulage at Nemacolin is somewhat different from that found in most mines. All car movements are regulated from the dispatcher's office underground. All roads are numbered, this being done chiefly to facilitate dispatching although it also minimizes confusion both in operation and in correspondence. A radical difference exists between the dispatching system employed at this mine and that used on railroads. In the latter case, the train is the unit, record being kept as it passes from station to station. In the Nemacolin mine, however, record is made merely of the number of cars entering or leaving each station (a section sidetrack) or the shaft bottom.

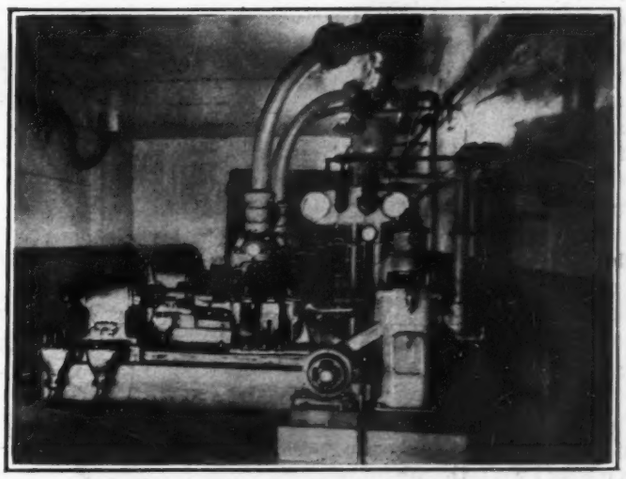
This system has 3 distinct advantages: 1. It enables the mine foreman or transportation boss to get a "birdseye" view of the production of all or any part of the mine at any time during the day. 2. It reduces transportation delays. 3. It systematizes transportation and makes the men composing the system feel that they are something more than mere machines. This automatically increases their efficiency.

A dispatcher is on duty constantly during the day. He is notified early in the morning by each section foreman of the number of cars required by him for that shift. This information is placed at the top of each sectional car record, together with the number of cars on hand, both loaded and empty. No motorman enters or leaves any side track without getting from the dispatcher by telephone any orders he may have regarding the disposition of his cars.

To maintain this system, it was necessary to arrange for an elaborate telephone layout. Accordingly, a 50-pair, lead-covered telephone cable leaves the dispatcher's switchboard and extends back into the mine. This sub-divides into smaller cables, until individual pairs are strung on the rib near the working places. In hanging the cables the fact was confronted that falls of roof would cut them. If they were laid on the bottom near the rib, the rats would attack them. Finally, it was decided to bury them and accordingly they are laid in 6-in. trenches filled with lean concrete. The system functions perfectly and it is believed to be invaluable in mines of large production.

Coal is gathered by storage battery and by cable-reel locomotives. The latter represent a departure from general practice in that they are 9-ton explosion-proof haulage units. A 400-ft. concentric cable is used to connect with the trolley wire out in the fresh air. Such a cable provides a positive return to the bonded track and is used for mining machines and portable air compressors as well as on the locomotives.

Main haulage is performed by 13-ton trolley locomotives of standard design. The track is of 44-in. gage. The cars hold approximately 3 tons and are 6x10 ft. in area and stand only 36 in. high above the rail. They are built with solid bodies, no end-gates being necessary, as revolving dumps are employed. This tends to keep the haulage roads clean.



Underground Pumproom at Nemacolin

Throughout the entire mining industry, at least wherever electric distribution of power is practiced, the electrically-driven centrifugal pump is the preferred unit employed in mine drainage. In many instances, also, these pumping stations may be made as nearly automatic as the substations.

The 13-ton locomotives are so equipped that they can

be operated in tandem whenever it is deemed that the time has arrived for such an arrangement.

Trolley wire is hung according to standard specifications. On straight track, it is supported every 20 ft. when maintained at normal height and when conditions force its suspension below that level, the supports are placed 15 ft. apart. On 100-ft. radius curves, the supports are spaced at 10-ft., on 150-ft. curves at 11 ft. and on 250-ft. curves at 14-ft. intervals. Both arc-weld and pin-driven bonds are used depending upon the permanency of the track.

An attempt has been made to eliminate grade cross-

Explosives Transportation Car

Only permissibles are used in this mine. These are transported to some central point underground by means of the car shown in this illustration. This is insulated both from the track and from the drawheads.

ings wherever practicable and within 2,500 ft. of the shaft they have all been done away with. Within this radius congestion begins but all danger is avoided if the viaducts or cross-overs are in operation. Should trouble develop at the shaft, the dispatcher can route all traffic over the loaded cross-overs to the slope and back over the empty cross-over, all of which can be done without disturbing a single individual. At intersections in the mine where such construction is impractical, automatic signals have been installed. They give ample warning by means of lights in each entry approaching such intersections of the presence of a trip of cars in the other passage. These lights—green, orange and red—make up a system comparable to any used on railroads.

When the loaded trips reach the shaft bottom, the locomotives cut off and go through the "chutes" or "slants" to the right or left. The shunting locomotive, by means of a sliding extension arm, engages the cars between the bumpers and moves the trip to the car-haul at the dump. This car-haul or feeder is a specially constructed chain that engages cast iron lugs on the under side of the cars. The chain grips the lug from both sides so that the trip can be moved in either direction at will. A 150-hp. motor supplies the power.

The dumps are revolved by ropes actuated by electric motors. Both the feeder and the dumps are operated by one man who controls the car haul with his left hand and a dump with his right.

As the cars are overturned the coal is subjected to a fine spray of water that effectively settles the dust. The water consumption averages 2.3 gal. per ton. The true effect can be readily observed on the white walls of the shaft bottom. These have not been rewhitewashed since coal was first run up the shaft more than a year ago.

The coal drops into a concrete bin provided with a gate at its bottom opening to the chute leading to the skip landing. This chute has a gate at its lower end and is designed to hold the capacity of one skip. In its movement within the shaft the skip actuates electric contacts that start and stop the motors operating the upper or bin gates. The chute gates are mechanically operated by the skip itself as it comes into position at or leaves the landing. Naturally, the loading arrangement is so designed that both upper and lower gates are not open at the same time.

To handle the spillage, a sump elevator has been installed at the foot of the shaft. This permits easy cleaning of the sump, weekly.

After discharge, the cars drift by gravity to the empty track which is at right angles to the main bottom. Here the "empty" shunter locomotive moves them into position for the mine haulage units. No uncoupling is done except when it becomes necessary to get a car of slate out of a trip before it reaches the dump.

Effort is put forth to maintain adequate roof support. Five-inch H-beams have been found highly practicable as cross bars. In 12-ft. lengths they are not too heavy to be handled and they furnish ideal support. At intersecting roads, more elaborate supports have been adopted. The draw slate over the coal ranges from 1 in. to 10 ft. in thickness. This means a treacherous roof and a constant source of danger. With this in mind, nothing is overlooked that will tend toward safe construction, even though it may be of only a temporary nature. The first rule laid down for the loader is that after seeing that his place is safe, he must erect a center post to furnish him protection while loading out his "cut."

Considerable areas of exposed slate along haulage ways have been gunited and a study of this method of protection is in progress. It has already extended over a 2-year period. Undoubtedly, gunite has saved the loading out of many cars of slate.

Indicates Load on Remote Substations

Automatic substations are used in several locations on the Edison direct-current system of the Union Electric Light & Power Company at St. Louis, says *Electrical World*. It is convenient to have an indicator in the system dispatcher's office that will show the load on these substations. Engineers of this utility, in cooperation with engineers of the Weston company, worked out a comparatively cheap and yet an accurate and reliable installation to do this job.

As an indicator a standard millivoltmeter is used and is mounted on the dispatcher's board. This meter is connected over a leased telephone circuit to a standard shunt placed in the Edison automatic station. When the station operates, the millivoltmeter reads on its calibrated scale the magnitude of the load.

One trouble encountered was eliminated cleverly. Any ground of the telephone lines put 125 volts maximum on the millivoltmeter. To prevent this a relay was placed on the meter circuit that will short circuit the meter when the 125-volt ground occurs. This relay operates on less current than is required by the millivoltmeter and has functioned perfectly when grounds occurred.

This installation has been in service some time and has given complete satisfaction. It is much cheaper and more accurate than the other remote indicators used on the system.

Results Obtained by Washing Coal in Rheolaveur

Method of Obtaining Washability Curves—Purpose of Middlings Layer—Separation Effect in Susquehanna River—Loomis Breaker Results—Little Degradation Suffered—Water and Power Used—Neutralization Advocated

By Staff Correspondence

A LARGE ATTENDANCE of members of the Engineers Society of Northeastern Pennsylvania assembled Thursday, Oct. 21, at the Auditorium of the Lehigh & Wilkes-Barre Coal Co., Wilkes-Barre, Pa., to discuss the new Rheolaveur process of coal washing just put into operation by the Glen Alden Coal Co., at its Loomis breaker. G. V. Woody, general manager, American Rheolaveur Co., Wilkes-Barre, Pa., and John Griffin, chief engineer, of the same company, were the speakers. Mr. Woody showed by means of four beakers full of bromoform, how tests were made to ascertain in any sample the percentages of coal, which were within any given range of specific gravity.

Guy V. Woody

The first beaker contained a solution of a specific gravity of 2; the next, one of specific gravity 1.9; the third, one of a density of 1.75 and the fourth, of a density of 1.6. The float in the first beaker was transferred to the second, and the float of the second to the third and so on. The sink in the first beaker was of a density exceeding 2, that in the second, between 1.9 and 2, that in the third, between 1.75 and 1.9 and that in the fourth, between 1.6 and 1.75. The float in the fourth was below 1.6. In making a determination, the five kinds of coal are dried, weighed and incinerated. By a simple calculation, the quantity of ash is then ascertained as a percentage. In this way what he described as washability curves could be established showing (1) the percentage recovery obtainable with any given proportion of ash in the recovered coal, (2) the quantity of ash in the worst coal retained in making a product of any given ash percentage, (3) the quantity of clean coal inevitably lost in the refuse for any given percentage yield and (4) the specific gravity of the worst coal contained in the product with any given percentage yield. Mr. Woody here emphasized the importance of obtaining a large sample taken with due care at specified intervals in a two-day run. This should be quartered down. Only thus could the actual character of the coal and its washability be accurately determined.

From the recovery curves the theoretical yield that can be attained with any given percentage of ash can be determined. From the coal curve can be determined the content of ash that would be in the worst coal retained in washing. As bone, that carries more than a certain ash percentage is not fuel and would be rejected in any physical examination, it is important to know what percentage of ash would be found in the worst bone, retained with any given percentage yield.

Clearly, the rest—which is reject—is not all ash-forming material. There is coal in it, but it is so mixed with rock that it is not fuel. Therefore, the reject must contain coal. The third curve shows how much of the theoretical reject is coal, so that when the actual reject is incinerated, and the percentage of its combustible ascertained, it will be possible to compare the actual and theoretical rejects and to note how close they are to one another. The fourth or specific gravity curve shows for the coal tested what specific gravity corresponds to a certain percentage recovery, a certain proportion of ash in the entire coal retained and a certain percentage of ash in the worst coal accepted. Material with a specific gravity of over 2 he designated rock, between 1.9 and 2 as heavy bone, between 1.75 and 1.9 and between 1.75 and 1.6 as light and lighter bone respectively and the rest as coal.

He remarked that in order to make a good separation at a certain given specific gravity, it was necessary to build up an unnatural quantity of the bone having about that density. This bone is known as "middlings." The line of division, if not perfectly attained, in washing would not so importantly affect, with such a body of middlings, the result as it would if the middlings were present in normal percentage, this latter being a really high-grade fuel.

For this reason the Rheolaveur deliberately removes middlings from the washing troughs through the discharge valves, elevates them and returns them to the feed. Thus, whereas at Loomis, a coal has little bone in the bed making separation of coal and rock difficult and causing rock to go with coal or coal with rock the material would have in the trough between rock and coal a thick bed of middlings in which the actual line of withdrawal though the discharge would be a matter of far less import than if rock and coal were flowing along almost in actual contact.

Mr. Woody stated that the Rheolaveur, except for the Rheo boxes or valves and for the building up of the middling bed by the means described, did not contain any new feature. The Susquehanna River was in a sense a large Rheolaveur. No one expected to find clean coal in the stream near the mines, for it was washed further down. For this reason, no barges recovering coal could be found at points where coal was being or had been discharged for years into the river. At Bloomsburg further down the dredges begin to appear, but the coal is not of the best. It is a high-grade bone. Way down the Susquehanna, near McCalls Ferry, an extremely high-grade coal is removed.

Mr. Griffin followed Mr. Woody with a description of the Rheolaveur, both with sealed and closed discharges. He gave an account of the Loomis breaker operation where sizes down to and including buckwheat

No. 1 are treated without preliminary separation. The Rheolaveur when started ran two days without any cars being rejected for impurity. It was then shut down so that it could be given its full feed, and it then exceeded the specified capacity by 10 per cent without any cars being condemned for bone or slate. Some were rejected for oversize and undersize, but that fault lay either in the screening after the coal had passed the Rheolaveur or in the overflow between bins. One day when the feed was 10 per cent above the rated capacity there was 0.21 per cent of refuse in the coal and 0.625 per cent of coal in the refuse. The next day these figures were 0.58 and 1.03 respectively—both better results than could have been expected.

Mr. Woody, in his closing remarks, said that the introduction of Rheo boxes, elevators and pumps, the last to lift fine coal, seemed at first sight to promise undue degradation. It must be remembered, he said, that the clean coal does not find its way into any one of the three and that only the middlings are trapped and elevated. These middlings contain enough rock material to make them reasonably resistant to degradation, especially where the buckets of the elevator are closely spaced. At the Loomis colliery, it had been difficult to obtain figures, but to all appearances the degradation was less than that caused by the former washing process.

DRAINAGE FROM BIN IS ONLY WATER LOST

About 4½ tons of water are used per ton of coal, but the water is recirculated, and the only loss is that sustained from bin drainage. Only 4 to 7½ per cent of the water in circulation is needed for make-up purposes. Furthermore what water is used is first employed on the shaking and lip screens to clean the coal and make the screening action more active and perfect.

At the Bon Carbo mine, Cokedale, Colo., a bituminous operation of the American Smelting & Refining Co., 1 hp. was used per ton per hour including all machinery —pumps, shakers and elevators. At Loomis, where about 300 tons is being washed per hour, two men attend the Rheolaveurs; one tends the recirculation tank which is too small and must be watched; the other takes care of the screens. In the plant replaced at least five times as many men were necessary as will be needed in the present plant when the recirculation tank is made of adequate size. Experience is not required to run the washer. After about two days' training the two men who knew nothing about the Rheolaveur were able to operate the Loomis washer successfully and did so as soon as it was started a second time with the feed increased as already stated.

The Rheolaveur, will wash small sizes satisfactorily. At Bon Carbo it is washing coal, none of which exceeds ¼ in. while 60 per cent is ⅛ in. or smaller. The coal is crushed so as to separate the rock and to give a product clean enough for the making of a good grade of metallurgical coke.

The speaker stated that, with treated water, the upkeep cost would be small. He could not see why any one would want to use untreated water. Even where, as at Bon Carbo, the water is not acid, it has been found that the addition of lime is helpful for it increases by five to six times the rate of action of the Dorr thickener. The water after use becomes more acid because the pyrite in the coal oxidizes and the sulphate dissolves.

Mr. Griffin said that the lime should be added till "yellow boy" (hydrate or iron and aluminum) appears. This substance will not form till all the free acid is removed.

Mr. Woody said that the removal of cinders from culm banks was a difficult problem. They might be, and, in Europe, had been skimmed off the top of the coal stream in the launder, but he had little hope of successfully removing such material. A plant was to be constructed at Hazleton for Pardee Bros. where seven culm banks containing heavy coal and much rock awaited washing. C. R. Seem, the president of the Society, presided.

Sensitive Meter Measures Heat Wasted

It is reported from Pittsburgh that an extremely sensitive meter, capable of measuring the heat produced in one minute by so small a quantity as 0.000025 oz. of burning coal, was recently demonstrated in the laboratory of the American Society of Heating and Ventilating Engineers at the U. S. Bureau of Mines station in that city.

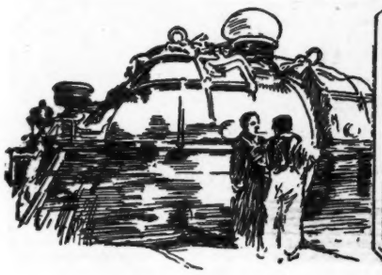
This device, which was perfected after several years of experimentation, is primarily intended to accurately measure the heat lost by conduction through various kinds of structural materials and also that lost from different types of construction. By measuring these losses, it is hoped that the amount of coal that will be required to properly heat the buildings and dwellings of the future will be appreciably decreased.

It is said that, as a result of data obtained by this instrument, it will be possible to so design and construct a building that it will require but 60 per cent of the coal now necessary to heat a similar edifice that is improperly designed or constructed of materials having high heat conductivity. It is also stated that if the heat which is at present lost in a year from the average home, because of faulty design and the use of inferior materials of construction, were recoverable in the form of coal, it would cover the average community with a black carpet.

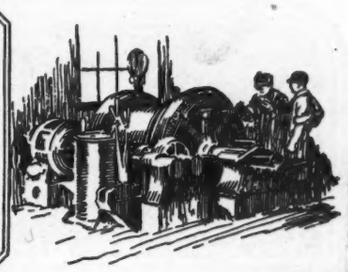
SOME IMPRESSIONS GAINED on a visit to the United States are briefly noted by Capt. F. Walton-Brown, Bachelor of Science, M.I.M.E., and reported in *Colliery Engineering* for May, 1926. A few of these are as follows:

"The output per man employed per shift (including all persons both above and below ground) was most remarkable, a production of ten tons being quite common. We saw several collieries, where 200 to 240 persons were employed, that produced 2,000 to 2,500 tons per day. The average for the whole country is just under four tons. British tons are referred to in all cases. Of the total employed the percentage of coal getters was observed to be remarkably high.

"Collieries in Great Britain with an annual output of 5,000,000 tons or thereabouts, usually consider themselves large producers, but the figures of an American company of over 30,000,000 tons per annum is in a different category altogether. In this connection, the longer hours worked by the American miners must be allowed for when making comparison with British figures, but, despite everything, the Americans must be given credit for some remarkable results, which show they are taking full advantage of their splendid conditions. Further, the general opinion was that these results could and would be improved upon."



Practical Pointers For Electrical And Mechanical Men



Electrical Trouble Shooting In the Power House

"Trouble-shooting is a fine art," says J. Elmer Housely, in *Power*, "and one that should be developed in the operation of every power house. Many electrical troubles are so readily overlooked and so apparently insignificant that they give only a gentle hint that a "blow-up" is in the offing. If trouble shooting can be confined to looking for these remote indications, many anxious moments will be avoided and interruptions to service minimized.

"To cite a recent case, the automatic control on a 40-hp. direct-current 250-volt motor on an eight-stage governor oil pump would trip out apparently "without cause" at infrequent intervals. A hint was sufficient. What will make a direct-current motor trip out with a 200-per cent current setting on the overload relay? Can it be overload? Surely not, for the unit can be turned over freely by hand and the thrust bearings are in good shape. What will cause an excessive current on a direct-current compound-wound motor? Principally two things—an open shunt-field winding and a flashover on the commutator. If the commutator is clean, and the brushholders are free from burns, no flashovers can occur and by elimination the possible sources of trouble are brought down to the shunt-field circuit. Let's look it over:

Starting at the control panel, a loose connection is found where the lug is bolted to the panel. A taped connection where the lead enters a conduit is untaped, and it is found tight. At the motor the field lead enters a speed-control rheostat. Taking the rheostat off its mounting reveals a nut loose where the lead is bolted to the terminal on the back of the rheostat. Untaping the lug connection at the motor shows that all but two strands of the wire leading from the motor have been broken at the point where the wire is soldered into the lug. There was not enough tape on this connection to prevent the stranded wire bending sharply where it was soldered to the lug. The connections between field coils and where the other end of the field wire is attached to the armature lead are all tight.

Here are three chances for an open field circuit which would have caused the motor to race if the relay had been set any higher. Evidently, it was the loose connections that gave an intermittent reduction of field current and caused a heavy current to trip the overload relay. After the necessary repairs were made, the current setting on the overload relay was reduced and no further irregularities occurred.

How To Box Armatures for Shipment to Mine

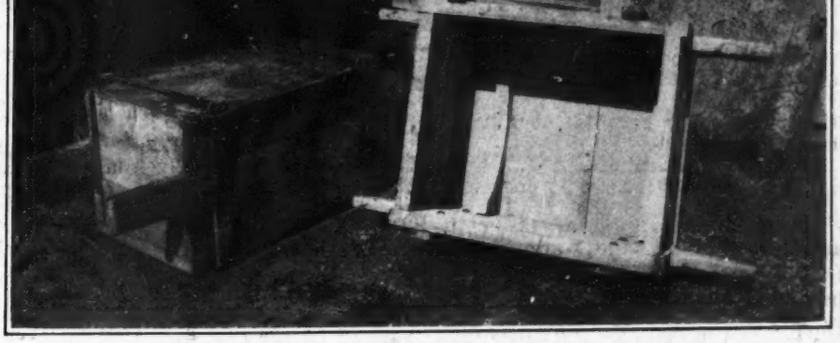
Armature winding itself is relatively expensive, but when the cost of delays and of the lost time of mechanics due to the failure is added, the actual cost is even more impressive. Many failures are due to lack of care of the armature between the time it leaves the winding room and its actual installation. Damage during transportation is probably the most frequent cause of such trouble.

Provision of special carrying boxes will practically eliminate transportation damage. The accompanying illustration shows the type of box used by the West Virginia Coal & Coke Co. The two boxes illustrated were photographed at the central repair shop at Omar.

These are for type MH88 locomotive armatures which are assembled complete with bearings, housings and pinions before being sent from the shop. The body of the box is of 1½-in. oak. Circles of wood are fastened in the bottom to fit the bearing housings so that no part of the armature proper touches the box.

Straps of ⅝x2-in. soft steel gird the bottom and sides. The ends of these straps extend through holes in the ½-in. steel cover. Bars driven through slots in the upper ends of the straps hold the cover in place. Boxes of this type will last for many years.

VINEGAR GIVES quick relief from boiler compound burns. As is widely known, most boiler compounds are caustic alkalis from which painful burns may be received if the compound comes into contact with the skin. In and about plants where such compounds are used constantly burns arising from their use are comparatively common. In such cases a glass-stoppered bottle of vinegar will make a valuable addition to the regular first-aid case in the boiler house.



Inside and Outer Construction of Armature Boxes
In the bottom of the box lying on its side, is the curved rest to fit the bearing housing of an armature. The other box shows the binding straps and how these protrude through the sheet metal cover which is held down by bars across the top.

News Of the Industry

Northern Operators Deny Pertinence Of the Jacksonville Wage Agreement As Lake Rate Hearing Is Resumed

By Sydney A. Hale
Associate Editor, *Coal Age*

Washington, D. C., Oct. 26.—Northern operators struck back at the charge that the Jacksonville wage compact was the real explaination of their declining lake trade when hearings in Docket No. 15007, *Lake Cargo Coal Cases, 1925*, were resumed here yesterday before Interstate Commerce Commissioner Hall and Examiner Gerry.

At the Atlantic City hearings held last July counsel for southern West Virginia and eastern Kentucky producers had insisted, over the protest of the complainants that wages were not in issue, that the competitive difficulties of Pennsylvania, Ohio and northern West Virginia were chargeable to the labor situation. Yesterday, however, eastern Ohio met the attack with a showing that losses in lake business had far exceeded reductions in other coal movement from the Northern fields.

The complaining districts, it was frankly admitted, struggled under a number of economic disadvantages which, it was insisted, were not within the power of the Commission to adjust. But these handicaps, it was contended, affected their entire coal business. The fact, therefore, that the rate of decline in lake shipments had been so much greater was offered as proof that the rate adjustment on this traffic was out of line.

South Alleges Lower Costs

As in the case of the recent hearings on eastbound rates, counsel for the Southern carriers indicated that their defense, to be presented later in the week, will stress lower transportation costs over their rails. Unless there is a last-minute change in plans, the Northern roads will rest their case largely upon the record made in the original proceedings in 1923-24.

Cross-examination of G. W. Oliver, witness for the No. 8 operators, on cost studies submitted at Atlantic City opened the hearing Monday. He said that lake cargo traffic handled by the Northern lines in 1925 as compared with 1923 showed losses of 20 to 90 per cent. He admitted that the tonnage declines on coal other than lake cargo had been greater, but maintained that the percentage losses on lake business had been much larger.

The rate situation, declared Harry L. Findlay, vice-president, Youghiogheny & Ohio Coal Co., is primarily responsible for the declining lake tonnage from the No. 8 and Cambridge fields. The Northern districts, he said, suffered from certain economic disadvantages, including competition for labor arising out of opportunities for employment in other industries in Ohio and Pennsylvania, higher land values, higher taxes, greater depletion costs. In these respects the Northern fields probably always would be at a disadvantage when compared with the Southern districts.

Geographical Situation Ignored

What he objected to, however, was a rate adjustment which deprived Ohio and Pennsylvania of the natural geographical advantage of proximity to the lake ports. This adjustment, he testified, had the effect of pushing the Northern fields away from the lakes and pushing the Southern districts nearer the lakes. As he viewed it, to haul Southern coal for five mills per ton-mile while Northern coal paid nine and ten mills was indefensible. He doubted very much whether the Southern lines could show any such difference in costs when compared with the Northern as would justify that discrepancy in ton-mile rates.

The general economic disadvantages, continued Mr. Findlay, were encountered in the sale of all Pittsburgh No. 8 coal. The fact that lake business suffered to a greater degree established the existence of some further disability in connection with that particular traffic. This disability was a prejudicial rate adjustment.

In 1925, he continued, the lake shipments from the Cambridge and No. 8 districts were 20 per cent less than in 1909 as compared with an increase of 38.6 per cent in other coal shipments. A comparison of 1925 with 1911 showed a loss of 49.2 per cent in lake business and a gain of 5.5 per cent in other sales. A comparison of 1925 with 1921 and 1923 showed a loss of 71.7 per cent in lake business in 1925 as against a gain of 1.3 per cent over 1921 in other coal sales and a decline of 21.7 per cent under 1923.

Speaking for his own company, Mr. Findlay said that its lake shipments from the No. 8 field had dropped from 893,000 tons in 1921 to 277,000 tons in 1925. Of the latter tonnage, 205,000 tons was contract business. In many cases, asserted the witness, consumers prefer No. 8 coal, but the spread in prices at the lower ports has diverted these orders to the Southern fields.

On cross-examination Mr. Findlay repeatedly declined to agree that labor costs were the principal handicap in the lake situation. The Northern fields, he maintained, had felt the effects of the freight-rate adjustment long before there had been any great disparity in labor rates between the Northern and Southern districts. Questioned as to statements made by S. H. Robbins, president of the Ohio Coal Operators' Association and also president of the Youghiogheny & Ohio Coal Co., on the labor situation, the witness replied that Mr. Robbins had been speaking for the Ohio operators as a whole.

"This is a simple rate case," he told his cross-examiners, "but you have lugged in a lot of other things to confuse the Commission."

"Were economic conditions equal, with your 28c. differential over the Southern fields you could dominate the market, couldn't you?" asked J. Van Norman, counsel for the Southern operators.

"Yes, but nobody can change these conditions by a wave of the hand."

"Why don't you try reducing wages like Fairmont?" inquired W. S. Bronson, general attorney for the Chesapeake & Ohio Ry.

"If you were an Ohio operator," retorted Mr. Findlay, "you probably wouldn't ask that question."

Connellsville Fades from Picture

Wylie Byers, representing the Fayette-Greene Coal Producers' Association, said that the Connellsville field first began shipping to the lakes in any appreciable quantity in 1917. In 1922 the producers in that section shipped 26 per cent of the output sold as raw coal to the lakes; in 1925, only 2.45 per cent; in the first half of 1926 less than 1 per cent—despite the fact that independent producers in that district paid the 1917 wage scale in both 1925 and 1926.

The contention that the Southern roads can handle coal so much more cheaply than the Northern roads was roundly assailed by F. E. Taplin, president of the Pittsburgh & West Virginia R.R., who appeared before the Commission this morning. Mr. Taplin submitted analyses of the 1925 operating expenses of the Bessemer & Lake Erie, Pennsylvania, New York Central, Ches-

apeake & Ohio, Norfolk & Western and Louisville & Nashville railroads, giving an average operating ratio of 77.1 per cent for the Northern and 71 per cent for the Southern group.

Applying the Southern operating ratio to the Kanawha rate to the Lakes of $1.91 for an average haul of 363 miles, set up an operating expense of $1.356 per ton. This expense was allocated by the witness on the basis of the percentage relationship the chief items of expenses bore to total expenditures in 1925, and the sums so allocated were divided by the mileage to give allocated costs in mills per net ton-mile.

Using the same allocated figures per net ton on operating expenses other than transportation for the Pittsburgh haul of 177 miles and adding thereto the Southern transportation expense for 363 miles, Mr. Taplin arrived at an operating expense of 95.5c. per ton. Taking the Northern operating ratio of 77.1 per cent, the witness testified that this indicated a Pittsburgh rate of $1.24, as contrasted with the $1.66 actually in effect.

Rate Reduction Rejected

While disclaiming any intention of saying whether the Northern rates should be reduced or the Southern advanced, Mr. Taplin stated that he had offered to reduce rates on his road, but that connecting lines had declined to join in the suggestion. If anything, he told Examiner Gerry, maintenance expenses per mile of line would be greater on the Southern roads than on the roads serving the Pittsburgh district because of the mountain grades encountered in hauling Southern coals to the lakes.

Like Mr. Findlay, Mr. Taplin also objected strongly to the introduction of the labor issue in the case. The South, he said, probably always would have lower labor costs and should not be denied that advantage. By the same token the Northern mines should not be robbed of the advantage of their proximity to the lake ports. Mr. Taplin denied point-blank that the Pittsburgh Coal Co. ever had discussed with him as head of the Pittsburgh Terminal Coal Corporation any proposal that the latter company become a party to the movement to reduce wages in western Pennsylvania to the 1917 basis.

J. B. L. Hornberger, vice-president, Pittsburgh Coal Co., described the gradual shrinking of the markets for his company's output. With the development of the Southern fields, the company had abandoned its river business in the South, surrendering a tonnage that once approximated 3,500,000 annually to shorter-haul mines. At one time, he stated, the company had $10,000,000 invested in river craft and agencies to care for this business. Shipments to the Northwest, where the investment in docks and yards was $15,000,000, had dwindled from nearly 5,000,000 tons to less than 1,500,000 tons. The all-rail market west of Sandusky had been ceded to competitors and eastbound business had been sharply curtailed.

The chief cause of the loss in lake business, said Mr. Hornberger, was an unjust freight-rate structure against which a fight had been started several years ago in the Boileau case. Any reduction in rates would accrue to the benefit of the consumers of the Northwest. His company, he explained, was not asking that rates be fixed to overcome natural economic handicaps, but was asking that its natural economic advantages be restored.

Donahey Enters Lists with Lake Rate Letter

Governor Vic Donahey of Ohio has entered the lists as the author of a letter to each of the governors of five Northwestern states in an effort to align them on the side of Ohio in the lake cargo rate case. The letters were sent to the governors of Michigan, Wisconsin, Minnesota, North and South Dakota, states depending chiefly on their coal supply through great lakes shipments from Ohio ports.

Governor Donahey's letter was in the nature of a rebuttal to that sent by Governor Gore of West Virginia, who asked those states to intervene in the coal rate case before the Interstate Commerce Commission on the side of West Virginia, Kentucky, Tennessee and Virginia in an effort to have present rates maintained.

Governor Donahey said that Ohio and Pennsylvania's fight is not for an increase in rates from West Virginia and other Southern coal fields, but for a reduction in rates from Ohio fields. This, he said, would insure the Northwest against higher prices for Southern coal and at the same time insure them a supply of Ohio coal, which he declared is barred from Northwestern markets because of present Ohio rates.

Ballots Circulated for Coal Mining Institute

Three nominees for president are listed on the ballots of the Coal Mining Institute of America: N. D. Levin, Columbus, Ohio; F. R. Lyon, Fairmont, W. Va., and J. J. Rutledge, Baltimore, Md. Those nominated for vice-presidents are T. W. Dawson, Scottdale, Pa.; E. A. Holbrook, State College, Pa.; W. H. Howarth, Brownsville, Pa.; T. R. Johns, Johnstown, Pa.; J. W. Paul, Pittsburgh, Pa., and J. B. Warriner, Lansford, Pa. Only three can be elected. The following are nominated for the office of secretary-treasurer: J. J. Maloney, Johnstown, Pa.; H. D. Mason, Jr., Ebensburg, Pa., and John Mrock, Meadowlands, Pa. Twenty are nominated for the executive board, of whom ten will be chosen. The ballots will be counted at the coming annual meeting, Dec. 8.

Westbound coal traffic through the Sault Ste. Marie canals during September included 1,417,283 net tons of bituminous and 124,090 tons of anthracite.

Supreme Court Says Strike For Back Pay Is Coercion; Dorchy Conviction Upheld

A strike called without just cause is unlawful, the U. S. Supreme Court held Oct. 25 in affirming the decision of the Kansas Supreme Court sustaining the conviction of August Dorchy, who as the vice-president of District No. 14, United Mine Workers, was found guilty of violating the Industrial Relations Court Act of that state. While the decision did not attempt to define the right to strike generally, being confined to the narrow limits of the case at issue, it is interpreted as of widespread importance in clarifying the legality of certain acts of organized labor.

Dorchy was charged with calling a strike at a mine of the George H. Mackie Fuel Co. in Kansas in violation of section 19 of the Industrial Relations Court Act, which section makes it a crime for an officer of a labor union to use the power and influence of his position to induce another person to violate any part of that act. He was convicted and sentenced to fine and imprisonment and appealed on the ground that the section undertook to prohibit strikes and thereby violated the personal liberty due-process clause of the Fourteenth Amendment.

After the U. S. Supreme Court had declared invalid those sections of the Kansas law involving compulsory arbitration in the Charles Wolff Packing Co. case, it remanded to the Kansas Supreme Court the Dorchy case for a construction of legislative intent as to whether section 19 would stand alone. This the state Supreme Court declared to be the case, treating the section in effect as a separate statute.

In the decision of the high court, rendered by Justice Brandeis, it is held that the right to carry on a business possesses value and that to interfere with that right without just cause is unlawful.

Dispute Pending Two Years

In the Dorchy case it was shown that the strike was called against the Mackie Fuel Co. because of a dispute between the company and one Mishmash involving $180 which had been pending two years and which concerned the age of Mishmash, employees less than nineteen years old being paid one rate and those over that age another. Mishmash at the time the strike was called was not employed by the company but was a member of the union. No issues of the contract between the union and the company were involved.

"To collect a stale claim due a fellow member of the union who was formerly employed in the business, is not a permissible purpose" for a strike, the Supreme Court holds. In its opinion it further declares that to enforce payment of a dispute by a strike is "clearly coercion."

The Pennsylvania Coal Co., Dunmore, Pa., has ordered 300 mine cars from the Pressed Steel Car Co. and 50 from the American Car & Foundry Co. The Pressed Steel Car Co. also has booked ten hopper steel cars for the Cheswick & Harmar R.R.

Baldwin Abandons Efforts To End British Coal Strike; Admits Government Failure

Stanley Baldwin, British Prime Minister, definitely put a quietus on any hope of further efforts by the government to settle the British coal strike on Oct. 25, when Parliament met in special session to renew the emergency regulations adopted soon after the strike was called. The tie-up is now in its twenty-sixth week.

Admitting the failure of all previous attempts by the government to bring about peace between the producers and miners, the Premier left no doubt that the warring factions must find a way to a settlement without assistance from the Cabinet. The Prime Minister spoke in the House of Commons, his address being subjected to much comment by Opposition members, including David Lloyd George, former Premier.

"After so many failures," said Mr. Baldwin, "I do not think anything could do more harm than to enter into still further negotiations where you see no prospect of a settlement."

The Prime Minister's speech followed a long address by R. Clydes, a Labor leader, who urged the government to do something to hasten peace, and another by Mr. Lloyd George, who accused the government of siding with the owners.

Speech-making by "Emperor" Cook, secretary of the miners' federation, was suddenly placed under ban Oct. 24, when a scheduled meeting in Staffordshire was dispersed by the police. The ban was just as suddenly lifted the following day, and it was announced that he would resume speaking in the coal fields. On the heels of this, however, came an announcement that Herbert Smith, president of the miners' federation, had been forbidden to speak in Yorkshire, where he planned to make an appeal to the miners to continue the strike.

Miners are still reported to be returning to work in large numbers. Late last week it was said that 241,000 had gone back to the pits, the most noteworthy defections having occurred in the Northwest Durham field, which heretofore had been the stronghold of extremists among the strikers.

Plea to Lease Virginian By N. & W. Denied

An application by the Norfolk & Western Ry. for authority to control the Virginian Railway Company by lease was rejected in a decision made public Oct. 22 by the Interstate Commerce Commission. The plea was denied partly because the Virginian was assigned to the Chesapeake & Ohio in the Commission's tentative plan for rail consolidation. The Commission decided that a merger of the Norfolk & Western with the Virginian was not in the public interest.

In its order the Commission recalled that in August, 1924, the Van Sweringen interests tried to put through a joint lease of the Virginian by the Norfolk & Western and the Chesapeake & Ohio, but the proposal was rejected by the N. & W. Later negotiations resulted in the applications of the N. & W. to acquire the Virginian and the C. & O. intervened in opposition. The lease also was opposed by the B. & O. road and the State of Virginia.

Some of the protestants alleged that the lease would give the Pennsylvania system power to stifle development of the low-volatile coal fields of southern West Virginia as competitors of Pennsylvania fields, and, according to the Commission, that the Pennsylvania's interest in the N. & W. is a constant menace to the southern West Virginia coal operator; and that adding the Virginian to the N. & W. would be destructive to the public interest.

One statement of the Commission interpreted as having some significance in its bearing on the proposed Nickel Plate merger was this:

"The president of the C. & O. testified that if the pending application should be denied and the Virginian should be allocated to the C. & O., that company or the Nickel Plate system, as the case may be, would make every reasonable effort to bring about the acquisition and control of the Virginian on terms and conditions that would meet our approval."

It was generally believed that the Commerce Commission would reject the Norfolk & Western's petition to lease the Virginian, and it would not surprise the financial community if the Chesapeake & Ohio applied soon, on behalf of the Van Sweringens, to lease the 300-mile line.

The Baltimore & Ohio, in a brief filed with the Interstate Commerce Commission, Oct. 22, protested against the proposed acquisition by the Delaware & Hudson of the Buffalo, Rochester & Pittsburgh road on the ground, among others, that this merger would interfere with arrangements by the Baltimore & Ohio for a new short line from New York to Chicago.

Keystone View Co.

Disappearance of a Curiosity

These two huge chunks of coal are said to be the largest in Great Britain. They were mined in a colliery in Wales and placed in a garden in the northern portion of London, where for years they have attracted much attention. It seems probable now, however, that unless some stringent measures are taken to prevent, they will gradually disappear. Like some other products of civilization they will figuratively if not even literally, fall a prey to the tomahawk of the savage.

Union Calls Out Open-Shop Miners in Scott's Run

Another effort by the United Mine Workers to get out the men working in open-shop mines in the Scott's Run and Maidsville districts of Monongalia County, West Virginia, was launched at Morgantown when Sanford Snyder, international representative, issued a strike call effective Oct. 20. Snyder says all mines in the two regions now operating on an open-shop basis are affected, but other union officials indicate that the move is directed primarily against the companies referred to by the miners as contract abrogators, including the Soper-Mitchell Coal Co., the Connellsville By-Product Coal Co., the Cleveland-Morgantown Coal Co. and the Gilbert-Davis Coal Co.

Following close upon the strike call came the announcement that the Ethel mine of the Stone Coal Co., which has been shut down for four years, will soon be reopened by Moore-Lynch & Co., lessors, on an open-shop basis.

During the first week the strike was supposed to be in effect output increased. By the end of the week 370 cars of coal a day were being produced as compared with 320 cars on the preceding Monday.

According to the latest figures, 259 non-union plants and one union plant are in operation in the northern West Virginia area. In calling a strike at this time, union officials indicated that they felt there was more chance of success than when loadings were light and miners in greater need of work.

Kanawha Meet Huge Success; Morton Re-elected

With the inspiration of twenty-three years of substantial service to the industry, several score of members attended the annual meeting of the Kanawha Coal Operators' Association, held in Charleston, W. Va., Oct. 21. The report of the secretary, Duncan C. Kennedy, was replete with instances of the practical value to the operators of the statistical, transportation and other activities conducted by this organization. If any doubt had existed concerning the importance attached to the weekly past sales reports of the Bureau of Coal Statistics of the high-volatile fields in this section, that doubt would have been removed by the intense interest displayed by the Kanawha operators in copies of a pamphlet carrying graphic charts of average spot and contract prices and in statements detailing enlargement of statistical activities.

It was decided to enlarge the general service program of the organization by a complete reporting system, covering credit and compensation information on all employees.

These officers for the ensuing year were chosen: D. H. Morton, president; W. C. Mitchell, vice-president; D. C. Kennedy, secretary, and J. L. Dickinson, treasurer. The following directors were elected: D. H. Morton (chairman), C. A. Cabell, J. D. Christian, John McKeever, E. M. Merrill, W. M. Wiley, John Laing, W. C. Mitchell and F. O. Harris.

Prolonged Strike of British Miners Has Unsettling Effect on Shipping; Cotton and Grain Trades Hard Hit

By Paul Wooton
Washington Correspondent of *Coal Age*

Ships are being used to such an extent in carrying coal to the British Isles that ocean transportation in many regular trades has been demoralized. Argentina is perhaps the worse sufferer, but there has been material interference with the crop movement and other export trade of this country.

The U. S. Shipping Board is receiving calls from many delegations seeking the allocation of additional ships to this or that port. Cotton exporters are in serious trouble. A 16,000,000-bale crop has been produced. Foreign spinners are buying actively, but the removal of British ships from the cotton trade has put a distinct limit on the amount that can be exported. Warehouse facilities at ports are inadequate.

While more is heard about cotton than other commodities, much the same situation is faced by exporters of other products. There is no shortage of ships. More commercial vessels are being held in standby than ever before. As considerable expense is involved in conditioning ships that have been out of service for some time, operators have been slow to get their ships ready, due to the expectation that the strike would collapse. Had there been any idea that it would have continued this long plenty of ships for all purposes would have been available. Incidentally, the action of the British in summarily withdrawing their ships from other trades has added to the demand for an adequate merchant marine of our own.

That actual stocks of coal last longer than theoretical forecasts has been shown in this strike, but Great Britain has been close to the bottom of its coal pile for some weeks. Desperate efforts have been made to build up a certain amount of reserve. It also is assumed that the people in the British Isles are anxious to impress the miners and owners that they can get along without them if they have to, as did the people of New England during the anthracite strike. It is assumed that the word has been passed along to the shipping interests that every effort is to be used to build up as large a reserve as possible. Seeing the urgent requirements of the country met with foreign coal also is calculated to stimulate owners and miners to settle their differences.

While there is no disputing that British industry has suffered greatly from the strike, it also is true that coal is a small factor in the cost of many British products.

The United States, of course, is furnishing only a small part of the coal which the British are importing, but during September, the last official figures available, 1,531,994 tons of American coal was sent to the United Kingdom.

The balance of cargo between the United Kingdom and Rio de la Plata points long has been an axiom of shipping. Coal has furnished the outbound cargo for British ships. Grain and bulky raw materials have furnished the return freights. The highly favorable rates which it was possible to make because of the fact that the ships had cargo each way could not be continued during the strike, with the result that the grain has had to pay the cost of the entire voyage; every shilling added to the freight rate reduces by that much the price received by the Argentine shipper. Thus what began as a domestic quarrel between "Emperor" Cook and the British mine owners has grown into a disturbance the effects of which are felt to the corners of the world.

EDITOR'S NOTE—*The foregoing Washington letter reflects certain views of official Washington. Due to the fact that policy as a rule prevents government officials from permitting their views being quoted directly, the authority for these reports is necessarily somewhat vaguely referred to. The views reflected are not those of any one group of officials, but of different men, in the legislative and executive departments. There is no necessary connection between their views and* COAL AGE *editorial policy; neither do they necessarily represent Mr. Wooton's personal views. It is felt that the opinions thus faithfully reflected will be of great interest to the industry. Where opinions are cited from sources outside of the government, the source will be specifically stated.*

C. & O. to Build 63-Mile Coal Road in Ohio

The Interstate Commerce Commission on Oct. 20 authorized the Chesapeake & Hocking Ry., a subsidiary of the Chesapeake & Ohio, to build a 63-mile double-track railway in Ohio to connect the Chesapeake & Ohio at Gregg with the Hocking Valley, another subsidiary, at Valley Crossing.

Application to build this road originally was filed by the Van Sweringens in behalf of the Nickel Plate, and authority was refused at that time on the ground that though the new line was needed to meet the requirements of transportation and lessen congestion in the coal movement it should logically be built by the Chesapeake & Ohio. Consequently the latest application was promptly approved.

At present 63 per cent of the coal traffic of the C. & O. moving west has to be transferred over the tracks of the Norfolk & Western, which are congested and which cannot handle the normal increase in its own traffic as well as that of the Chesapeake & Ohio.

The Sewell Valley R.R., of West Virginia, which will become the property of the Chesapeake & Ohio under existing agreements, has asked the Interstate Commerce Commission for permission to build 12 miles of new line from Rupert to Duo, in West Virginia. The estimated cost is $600,000 and it would serve mining operations.

Fourth Coronado Trial Ends in Disagreement

The fourth trial of the suit of the Coronado Coal Co. against District 21 of the United Mine Workers, held at Fort Smith, Ark., has resulted in a mistrial, the jury failing to agree on a verdict. The coal company brought action under the Sherman Act for losses alleged to have been sustained when the union called a strike in the Arkansas field in 1914. This is the second mistrial. Each side has won one verdict, but both times appeals were taken to the U. S. Supreme Court, and new trials were ordered.

Attorneys for the Coronado company have asked that a fifth trial be set. The earliest possible date is sought, according to Henry S. Drinker, of counsel for the company.

Deny Price Fixing on Coal For New York

A profit of 8c. a ton is made on the sale of stove coal by Burns Brothers, according to testimony by Sanders Wertheim, president of the company, in an investigation of the coal situation held Oct. 21 in New York City. This was brought out by Deputy Attorney General Israel M. Lerner, acting in behalf of Attorney General Albert M. Ottinger, who stated in his petition that be believed there existed "in New York City, County and State a combination among wholesale distributors of coal, in combination with carrying railroad companies, to maintain a uniform price, below which no coal is to be sold by the members of such combination to retail distributors of coal and consumers."

The companies named in the petition for investigation were the Lehigh Valley, Erie, and Delaware, Lackawanna & Western railroads; Burns Brothers, Blue Ridge Coal Co., Buffalo & Susquehanna Coal & Coke Co., Consolidation Coal Co., Delaware, Lackawanna & Western Coal Co., Empire Coal Mining Co., Susquehanna & West Virginia Coal Co., Tennessee Coal, Iron & Railroad Co., Stephens Fuel Co., Streat Coal Co., Cramer-Meyer-Dreyer Co., Knickerbocker Fuel Co., Pattison & Bownes, Frank L. Burns Coal Co., New York & Philadelphia Coal & Coke Co. and Pennsylvania & West Virginia Coal Co.

George A. Patterson, president of the Scranton & Lehigh Coal Co., who was the first and only witness on Oct. 25, when the investigation was transferred to Brooklyn, defended the Brooklyn Coal Exchange, declaring that its functions were limited to furnishing credit information to its members and to making collections. His company, Mr. Patterson caid, had no connection with any other concern in the trade, nor with mine operators nor coal railways. Enumerating the items that enter into the cost of coal delivered to the company, Mr. Patterson said a profit of 68c. a ton was made on stove and nut coal, but that the steam sizes were sold at a loss. The witness was directed to produce his books Nov. 8.

N.C.A. Committee Urges Collection of Trade Data To Improve Sales Efforts

The special marketing committee of the National Coal Association met in the William Penn Hotel, Pittsburgh, on Oct. 22 to review the proceedings of the Chicago meeting of bituminous coal sales managers and agents held June 10 as a part of the ninth annual convention. John H. Jones, president, Bertha-Consumers Co., who is chairman of the committee, was assisted by Harry L. Gandy, executive secretary of the N.C.A.

At the outset of the meeting, which lasted all day, it was decided to recommend to the board that a permanent marketing committee be appointed to perpetuate and add to the constructive efforts of the present one, which is serving temporarily. Other recommendations to the Board of Directors that were made by the committee follow:

That the contract year be changed from April 1 to Jan. 1.

That the collection and dissemination of such trade information by districts as will assist the operators in the production and sale of coal be fostered and encouraged.

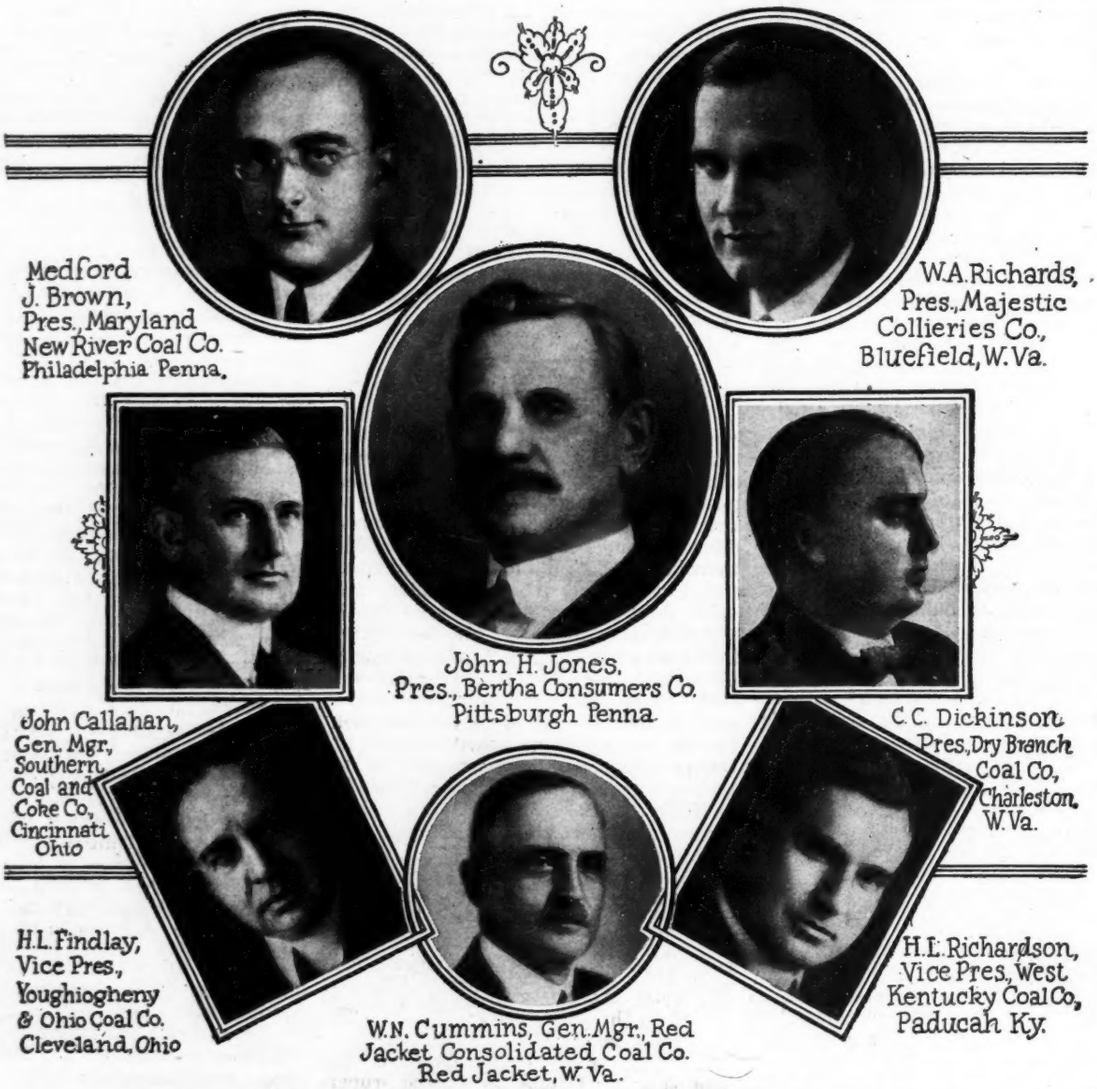
That a study be made of the question of the standardization of sizes and the preparation of coal.

That the board of directors give careful attention to the arbitrary cancellation of contracts and orders, which is a very disturbing factor of the market.

That a continuing study be made looking toward the possible consolidation of local sales efforts.

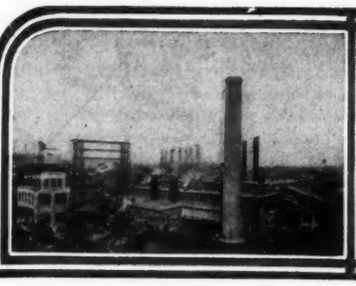
In order that something tangible might be quickly precipitated from the efforts of the association, the committee recommends that there be held at the earliest possible date another general meeting of bituminous coal sales managers and agents, similar to that staged in Chicago last summer, to which would be invited executives of coal companies. Its purpose would be to continue the charting of better marketing plans.

Besides Chairman Jones, the men on this committee are: Medford J. Brown, president, Maryland New River Coal Co.; John Callahan, general manager, Southern Coal & Coke Co.; W. A. Richards, president, Majestic Collieries Co.; David E. Williams, Jr., Forge Coal Mining Co.; V. A. Connery, Miami Coal Co.; W. A. Cummins, general manager, Red Jacket Consolidated Coal Co.; C. C. Dickinson, president, Dry Branch Coal Co.; H. L. Findlay, vice-president, Youghiogheny & Ohio Coal Co.; A. J. Maloney, vice-president, Chicago, Wilmington & Franklin Coal Co.; H. L. Richardson, vice-president, West Kentucky Coal Co.; J. A. Teegardin, general manager, New York Coal Co., Columbus, Ohio; W. M. Wilshire, president, West Virginia Coal & Coke Co., and C. G. Hall, general manager, Walter Bledsoe & Co.

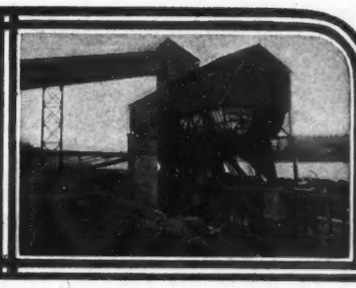

Medford J. Brown, Pres., Maryland New River Coal Co. Philadelphia Penna.
W.A. Richards, Pres., Majestic Collieries Co., Bluefield, W. Va.
John H. Jones, Pres., Bertha Consumers Co. Pittsburgh Penna.
John Callahan, Gen. Mgr., Southern Coal and Coke Co., Cincinnati Ohio
C.C. Dickinson Pres., Dry Branch Coal Co., Charleston, W. Va.
H.L. Findlay, Vice Pres., Youghiogheny & Ohio Coal Co. Cleveland, Ohio
W.N. Cummins, Gen. Mgr., Red Jacket Consolidated Coal Co. Red Jacket, W. Va.
H.L. Richardson, Vice Pres., West Kentucky Coal Co., Paducah Ky.

Members Marketing Committee, National Coal Association, 1926-27

The committee has a membership of fourteen; the others are W. A. Connery, Miami Coal Co.; A. J. Maloney, vice-president, Chicago, Wilmington & Franklin Coal Co.; J. A. Teegardin, general manager, New York Coal Co.; David E. Williams, Jr., Forge Coal Mining Co.; W. M. Wilshire, president, West Virginia Coal & Coke Co., and C. G. Hall, general manager, Walter Bledsoe & Co.



News Items From Field and Trade



ALABAMA

To Expand at Mill Creek.—The Mill Creek Coal Co., Carbon Hill, expects to provide new equipment and make other necessary improvements at Mill Creek mine to increase capacity 50 per cent. Jas. Nichol, Jr., is vice-president and general manager, and R. E. Galloway, president, with headquarters at Carbon Hill.

Deepwater Developments Rumored.—The Deepwater Coal & Iron Corp. is said to contemplate extensive developments near Nauvoo, Walker County. Two slopes probably will be opened. The company is now operating the Nauvoo mines, purchased some time ago from the Monro-Warrier Coal Co., and it is rumored that it may purchase the Alabama Central R.R., which with some extensions will connect its operations with the Southern, Illinois Central and Frisco railroads. N. V. Hansell, Jasper, is chief engineer of the company.

Fire of undetermined origin recently destroyed the tipple, two coal washers which have been in operation and two washers which were to have been placed in operation soon at the Johns mines of the Black Diamond Coal Mining Co., Tuscaloosa County. The tipple and washers will be rebuilt as soon as arrangements can be perfected.

ILLINOIS

More Mines Resuming.—The Peabody Coal Co. recently reopened its Shellbark, Burr "C" and Riverton mines. The Old Ben Coal Corporation also has resumed production at one of its idle mines in southern Illinois.

Output Close to 1925 Level.—Production in the state is holding close to the 1925 monthly tonnages. For the seven months of the present coal year the output is ahead of last year, a report by the Illinois Department of Mines and Minerals shows. The output in September from 175 mines working an average of 16 days and employing 55,499 miners totaled 5,260,369 tons, against 5,365,304 tons in September, 1925. Thirteen strip mines in September produced 301,570 tons, employing 898 men and working 15.1 days. The strip production in September, 1925, was 286,199 tons. The 1926 seven months production was 32,317,810 tons compared to 31,174,846 tons in 1925.

Oil Drillers Strike Hard Coal.—An unusual coal find was made recently near Mount Carmel when at a depth of 1,375 ft. drillers struck a seam of hard coal 7 ft. thick. So far as known this is the first hard coal ever found in the Mount Carmel territory. The drilling was being done for oil well No. 2 on the Groff lease when the coal was discovered.

Mine-Rescue Classes Growing.—James Robertson of Duquoin, superintendent of the Duquoin mine-rescue station, which is operated under the supervision of the U. S. Bureau of Mines, has organized a new class in first-aid and mine-rescue work at Carterville, in the heart of the Williamson County coal field. At present approximately six hundred coal miners and others interested in the work are enrolled in the class, with other applications coming in.

Sahara Mine No. 12 of the O'Gara Coal Co., at Harrisburg, has resumed operations following a shutdown covering a long period. The mine employs 600 men with an approximate daily output of 3,000 tons.

Loader Scale a District Problem.—The Coal Operators' Association of Illinois recently held an organization meeting in Chicago, when the officers selected when the association was formed last July as a result of the consolidation of the three old organizations in the state were re-elected. Among reports read was one dealing with attempts to obtain a union wage scale in Illinois for machine loaders. It stated that John L. Lewis, international president of the United Mine Workers, considers the question one to be determined by the Illinois district rather than the international union.

The Saline County Coal Corporation opened its mine No. 4, four miles south of Harrisburg, on Oct. 6, giving employment to 350 men. The mine had been closed for nine months.

The West coal mine at Fairbury will be reopened and coal will be hoisted about Jan. 1.

New Furnace Fired. — The second blast furnace of the St. Louis Coke & Iron Co.'s plant in Granite City, recently completed at a cost of $3,000,000-was fired for the first time on Oct. 14. This additional equipment gives the company's plant a capacity of 30,000 tons of iron and 35,000 tons of coke monthly in addition to various by-products. About eighty workers will be added to the present force of 500. The construction of this furnace followed soon after the reorganization of the company last October, when the properties were bought by a group of bondholders at a sale ordered by the U. S. District Court. A new corporation was then formed and $2,000,000 additional capital put into the business. The officers of the company are W. G. McGuire, president; D. M. Curran, vice-president; Andrew Mann, treasurer; P. D. Nelson, secretary, and George W. Buckingham, counsel.

Full Force at "Nigger Hollow."—Mine No. 2 of the St. Louis & O'Fallon Coal Co., at Belleville, has resumed operations with a complete force of men numbering 572. The mine will work full time for an indefinite period. In the past the mine has been worked only part time with about half of its complete force.

INDIANA

New Stripping in Action.—The new strip operation of the United Electric Coal Companies at Farmersburg, Sullivan County, is now shipping coal. Production started last week. Approximately 25 cars of coal a day are being mined. There are two large units and two small loader shovels. The company also operates strip mines at Danville, Ill., and Cuba, Ill. The Farmersburg operation brings the combined production of the company up to 6,500 tons daily.

W. S. Blauvelt Resigns.—Warren S. Blauvelt, president of the Indiana Coke & Gas Co., Terre Haute, prior to its sale to the Indiana Consumers Gas & By-Products Co., a Delaware corporation, has resigned. His retirement is part of the reorganization plan of the new company. Sale of the coke and gas-producing plant also included Vigo mine No. 29, which is part of the property of the Terre Haute company. The plant began operating in 1918 and provides gas at wholesale rates to the Indiana Gas Utilities Co., which serves a population of about 85,000 in Terre Haute, besides the surrounding territory. The coke output of the plant is distributed through the company's own sales organization to the industrial and domestic trade throughout Indiana, Illinois, Iowa and parts of Wisconsin, Minnesota, Michigan and South Dakota. The byproduct plant consists of 60 Koppers gas and coke ovens, with complete auxiliary equipment for the recovery of byproducts.

IOWA

Leases Big Coal Tract.—O. P. Herrick, head of the Flint Brick & Coal Co., recently closed a lease on the coal rights under more than 700 acres of land lying just north of the city limits of Des Moines. Herrick has announced that he will make improvements and enlarge the handling capacity of the company's mine equipment next spring.

The mine will then have a daily capacity of 1,000 tons. Employment will be given to from 300 to 400 men when the mine is operating at capacity. The seam is 4 to 6 ft. thick.

KENTUCKY

Railroad to Tap Rich Field?—A surveying crew of the Louisville & Nashville Ry. is working out from a point on the Lexington-Whitesburg extension up the Middle Fork of the Kentucky River into Leslie County. The survey, it is said, will extend to Hyden, county seat of Leslie County. It is believed this is the preliminary move to tap the big coal holdings in Leslie and Clay counties by the extension of the L. & N. through these counties to Manchester, Clay County, present terminal of the Cumberland & Manchester R.R., which was recently sold to the L. & N. This link would join the Cumberland Valley division at this point with the Whitesburg extension at or near Beattyville.

A shaker screen at the Race Creek coal mine, near Henderson, has been legally decreed a part of the mine's holdings and not personal property. The question was raised when the Morrow Manufacturing Co., of Wellston, Ohio, filed suit in circuit court at Henderson alleging that the shaker was personal property and should not go into the hands of the Ohio Valley Banking & Trust Co., at Henderson, as trustee of the mine. Circuit Judge N. B. Hunt ruled against the manufacturing company.

OHIO

Though Blind, Miner Works. — Although able to work in a mine with his son, John Schucht, of Adena, will continue to receive compensation from the state fund for total disability. This was the decision of the Ohio Industrial Commission when the case was called to its attention recently. Schucht had lost his sight through a mine accident. Last May the commission received the report that he was working steadily and the matter was investigated. It developed that he earned $313,17 between Feb. 23 and July 31 of this year, which is a weekly wage of $13.88. He reported that he worked with his son, who was his "buddy." His son mined the coal and the blind father picked out the lumps before it was loaded on the mine cars. Mine officials hesitated to employ him because of his blindness but the miner begged to be given a chance and they consented in view of the fact that his son was with him at all times.

The Duncanwood mine of the Big Short Creek Coal Co., at Adena, in Harrison County, with a normal output of 1,200 to 1,400 tons daily reopened last week after a suspension of eight months.

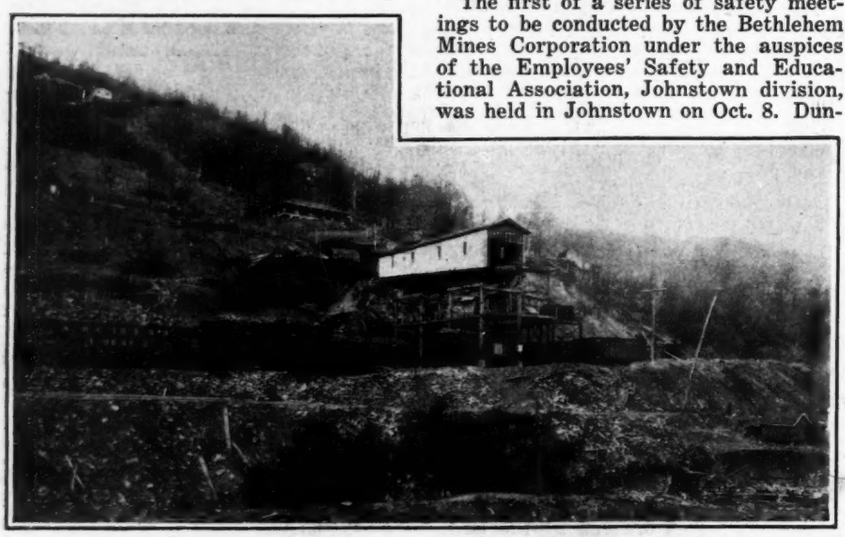
Eastern Ohio Gaining. — Operations have been resumed at the Pultney mine of the Cambria Collieries Co., near Bellaire, after an idleness of two years. The company plans to use the services of about 120 men for the time being. The Weege mine of the River Collieries Co. resumed last week after a shutdown of more than a year. Approximately 200 men are employed, and the number will be increased as operations become more normal.

PENNSYLVANIA

Buck Mountain Breaker Working.—The Buck Mountain Coal Co. has started operation of its new breaker at Gowen, not far from Hazleton, with 150 men employed. The mine has been leased from Coxe Brothers & Co. by Hazleton and Philadelphia interests. For years this mine was idle. The Interior of the mine was placed in shape for resumption of operations during the last anthracite strike. The breaker is operated by electricity.

John Kelsall, of Patton, Cambria County, veteran member of the United Mine Works, is a candidate for the office of president of District No. 2, opposing John Brophy, the present incumbent.

The first of a series of safety meetings to be conducted by the Bethlehem Mines Corporation under the auspices of the Employees' Safety and Educational Association, Johnstown division, was held in Johnstown on Oct. 8. Duncan May, superintendent of the Johnstown mines, was in charge, and 300 employees were present. William G. Duncan, supervisor of State College mine extension work, was the speaker. Three reels of moving pictures were contributed by the U. S. Bureau of Mines on twelve points of safety, first-aid and oxygen breathing apparatus.



Reliance Coal & Coke Co., Hartranft, Tenn.

This company has openings in the Mingo, Sandstone Parting and Sterling seams. The property is located a short distance from Middlesboro, Ky. The present production is around 300 tons per day.

Winters Mines Sold. — The C. L. Davis Coal Co. has purchased the James Winters mines near Somerset, Somerset County. The well-known Listie coal underlies the tract.

R. P. Ferringer, of Brookville, having lately sold the Somerville mine, has bought the Oliver mine at Osceola Mills, in Clearfield County. His new acquisition has a capacity of 100 tons daily.

New Development Planned. — The Shannopin Coal & Coke Co., Pittsburgh, is perfecting plans for a new development at Poland, near Dunkard. An outlay of about $115,000 will be made for construction, which will include an electric substation and fan house.

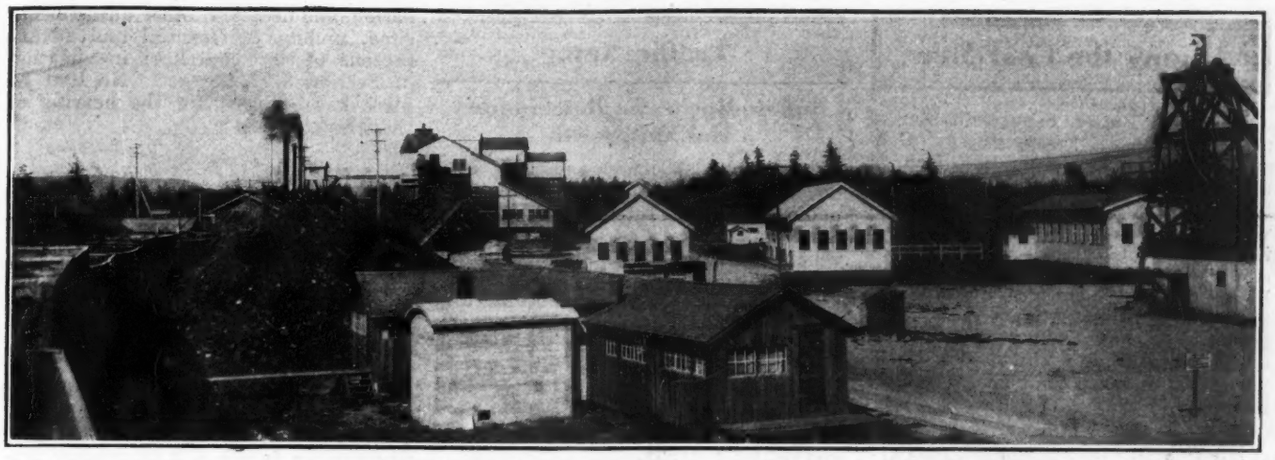
Job Hunters Swamp Soudan Mine.—The Soudan mine of the Valley Camp Coal Co. at Van Voorhis, on the Monongahela-Marianna branch of the Pennsylvania R.R., has resumed operations in full after being closed for several months. About 400 men will be employed, under the Jacksonville scale. Due to the fact that the mine is the only one in the immediate neighborhood working on the Jacksonville scale, there were more than 1,000 applications for jobs.

Pond Creek Mine Sold.—The Wolfe Coal Co., of Wilkes-Barre, has completed a deal by which it gains title to the Pond Creek mine near Hazleton, taken over from the East Point Coal Co., of Scranton. The Pond Creek operations have not been worked for some time. The Wolfe company has been running collieries at Woodside and Lattimer, but the coal is prepared at the Drifton breaker of the Lehigh Valley Coal Co. Joseph Sarricks, of Freeland, has been named superintendent of the Pond Creek operations.

While workmen were making excavations for foundation walls for the new community house at Pottsville several days ago an outcropping of coal was encountered. It was later explained that the outcrop was part of a seam that had been mined in the early days of the anthracite industry in the Pottsville field.

Mines Nos. 25 and 45 of the Russell Coal Co., at Clymer, resumed operation last week after having been closed since last spring. About 200 men are employed.

A person who reached the age of fifty years between the time he passed an examination for bituminous mine inspector and the time he was certified is eligible to appointment, Attorney General George W. Woodruff has held in an opinion rendered to Joseph J. Walsh, State Secretary of Mines. Under the Pennsylvania State mining laws applicants for inspectorships must be between the ages of thirty and fifty years. In the instance in which the opinion of the State Department of Justice was requested, the applicant reached the age



Plant of the Bellingham Coal Mines, Bellingham, Wash.

Located within the city limits of Bellingham, Wash., this plant is one of the outstanding coal properties of the state and has the largest individual payroll in the city, according to the Bellingham *Herald*. With two slopes now in operation the mine is the largest producer in the Northwest. The Bellingham seam, which the company is working, is 96 to 168 in. thick.

of fifty between July, 1925, when he passed the examination, and May, 1926, when he was certified.

UTAH

Frank N. Cameron, vice-president and general manager of the Utah Fuel Co. and associated with the Utah coal industry for more than 35 years, has resigned and will be succeeded by Theodore C. Keller, widely known coal operator of Chicago, who was recently elected president of the company at a meeting in New York. Mr. Keller says the company contemplates reorganization along the lines of increased efficiency rather than higher output until market conditions warrant the latter course. Mr. Cameron, who rose from the ranks, will devote his time to his other interests, which include the Liberty Fuel Co., a fireclay company, a bank and other things. The Utah Fuel Co. is one of the two largest Utah coal mining companies.

WEST VIRGINIA

Wheeling interests have leased the old Dolls Run Coal Co. mine on Dolls Run, near Morgantown, from the Barrackman interests and will operate it soon.

The Scott's Run Coal Co., a new organization which recently opened a mine in the Scott's Run field, will operate its mine under an agreement with the union, according to C. F. Davis, secretary-treasurer of District 31. The plant when operating at normal capacity will employ about 50 miners. The plant is said to be one of two now operating in the Scott's Run field on a union basis.

Dakota Mine Rehabilitated. — After being shut down for a month to permit a general rehabilitation program to be completed, the Dakota mine of the Bethlehem Mines Corporation has been reopened with an initial capacity of 2,800 tons daily. This will be increased to 3,500 tons daily in a few weeks. In order to make this tonnage possible, a new steel tipple equipped with screens to furnish mine-run, slack, three-quarter and lump coal has been built. Other apparatus can be quickly installed to screen other sizes should this become necessary. The main haulway has been retimbered, a new ventliating fan installed and the entire air system of the mine has been renovated. New overcasts carry the air to all parts of the mine now. The work of rehabilitation was done under the personal direction of Norman D. Elmslie, division superintendent.

W. E. Wheeler, president of the Wheeler Coal & Coke Co., of Columbus, Ohio, and W. S. Johns, of Charleston, have taken over the Coal Fork Coal Co. mine at Coal Station, on Cabin Creek, and will operate the mine under the name of the Etta-Kathrina Coal Co. The Wheeler Coal & Coke Co. will handle the output, with Mr. Jones in charge of the mine.

Thurmond Mines Working. — The Hutchinson Coal Co., which recently took over the properties of the Thurmond Consolidated Coal Co. at Argyle, Dabney and Macbeth, in the Logan field, has resumed operations at these mines. Work was started promptly to clean away the slate and get rid of the water which had accumulated since last June and such favorable progress was made that mining operations were begun on a limited scale at all three mines within less than a week after the mines had been taken over and, according to H. A. McCallister, general manager, the number of men employed will be increased as the clean-up goes forward.

Twenty-one civil actions have been brought by miners against the Elm Grove Mining Co., in Ohio County for the purpose of recovering tools left in the mine recently when a strike was called. The men allege they left tools in the mines when they went out on strike, and that they have not recovered them nor have they received recompense.

Balks at Coal Tax Case. — Failure attended first efforts made in Morgantown to obtain a special circuit judge to hear the appeal of the James A. Paisley coal interests from the decision of the Monongalia County board of equalization and review refusing to reduce from $6,818,415 to $1,809,186 the assessments on 26,000 acres of coal lands in three districts of the county. When the case was called in Circuit Court Judge I. Grant Lazzelle announced that he preferred not to consider the case as his own coal interests in the field might make him personally interested. He was fearful, he said, that his decision in the case might be considered to be dictated by personal reasons.

CANADA

The Dominion Government is prepared to subsidize another shipment of 4,000 tons of Alberta coal to Ontario to the extent of $2 per ton. Charles Stewart, Minister of Mines, has been in Toronto with reference to the government's proposal, which would make Alberta coal available to Ontario consumers at $11 per ton plus the local dealers' charge of $2.50 for distribution. The cost of the coal at the mines is roughly $4 per ton, and the freight rate to Ontario points is $9 per ton, $2 of which the Dominion Government is prepared to pay.

The Provincial Department of Mines has announced that the coal output of British Columbia for the first eight months of the year totaled 1,453,561 tons, as compared with 1,584,695 tons for the corresponding period of 1925.

The South Okanagan Collieries, which is developing a large area of coal land near Keremeos, in the Nicola-Princeton district, has installed a tipple and washing plant. The company has explored the property with a diamond drill and has located five workable seams of coal it is sinking two shafts and already is mining coal from one of the seams. The coal is a non-caking bituminous coal. It is not as good a coal as that found in the Crow's Nest Pass district, but owing to the geographical position of the Princeton field and its nearness to the Kettle Valley Ry. the mines in this district are finding a good market in Vancouver and Victoria, where they seem to be able to compete against the Vancouver Island mines.

Among the Coal Men

Harold B. Butler, deputy director of the International Labor Bureau, Geneva, Switzerland, and **W. J. Ellison**, of the Labor Bureau's staff, last week left for the United States, where they will study industrial conditions, particularly from the standpoint of the employer. They will visit New York, Pittsburgh, Detroit, Chicago and Washington and will investigate profit-sharing labor banks and conditions of unorganized labor. The object of the visit is to increase the efficiency of the bureau.

Wide World Photo

Dr. Friedrich Bergius

Dr. Friedrich Bergius, of Heidelberg, Germany, inventor of the Bergius method of producing oil from coal, arrived at New York Oct. 14 on the steamer "Resolute." He will take part in the conference on improved methods of utilization and combustion of bituminous coal to be held Nov. 15-19 at Carnegie Institute of Technology.

G. H. Merryweather, president; **R. B. Starek**, secretary-treasurer, and **Ira C. Cochran**, commissioner, of the American Wholesale Coal Association, are making an extensive trip through the East in the interest of the association. They expect to visit Cleveland, Pittsburgh, Buffalo, Albany, Boston, New York City, Philadelphia, Baltimore, and Charleston and Huntington, W. Va.

Roy Holmyard, president of the Ohio & Kentucky Coal Co. of Cincinnati, Ohio, sailed Sept. 29 for England, where he will remain until Christmas. He is interested in certain English fuel concerns with his brother, but the trip primarily is to look after his daughter, who has been ill in England for nearly a year.

Frank Ambush, until recently president of the Phoenix Fuel Co., Jobbers, of Louisville, recently suffered a nervous breakdown, from which he is convalescing at his home.

C. M. Weld, of Weld & Liddell, consulting engineers, having completed several examinations of coal properties in West Virginia and Tennessee, has returned to New York.

Traffic News

Buffalo-Rochester Rate Inquiry Has Outgrowth

The Central Pennsylvania Coal Producers' Association has filed a complaint with the Interstate Commerce Commission known as Docket 18802, in which it brings to the Commission the rate relationship between that district and northern West Virginia on coal destined to the Buffalo-Rochester territory. This complaint is an outgrowth of the complaint of the Acme Coal Co. vs. the B. & O., Docket 18514. It is intended to preserve differential relationship between central Pennsylvania and competing districts.

The complaint points out that the operators in the Clarksburg district and the Morgantown district have both filed complaints alleging unjust and unreasonable rates, and asks that the rates from the central Pennsylvania territory be considered at the same time and place that the Commission gives further consideration to the complainants in Docket 18514.

A sub-complaint, 18802-No. 1, has been filed by C. J. Goodyear for the Pittsburgh Northern Coal Rate Committee vs. the B. & O. et al., in which it is alleged that the rates from the Pittsburgh district are much higher, considering the service performed, than the rates from northern West Virginia, Morgantown - Clarksburg district, to Buffalo-Rochester district. The complainant in this case asks the Commission to set hearing at the same time and place that the Acme Coal case is heard, as this complaint is an outgrowth of the complaints filed in Docket 18514.

Rates to Moline Called Unjust

The Moline Consumers' Co., Moline, Ill., has filed a complaint, known as Docket 18770, against the Chicago, Burlington & Quincy R.R. et al., charging violation of Sections 1 and 3 of the Interstate Commerce Act in the application of rates from various coal mines located on the Chicago, Burlington & Quincy, Chicago Milwaukee & St. Paul, Chicago, Rockland & Pacific, Illinois Central, Louisville & Nashville and Norfolk & Western railroads to the Moline district. The complainant, alleges that the rates from the Linton and Clinton districts of Indiana to destinations of East Moline, Moline and Rock Island are excessive, unjust and unreasonable in violation of Section 1.

The charge also is made that the rates from the Linton and Clinton districts of Indiana to the same destinations are materially higher with transportation conditions substantially similar than the rates and charges enjoyed by complainant's competitors at above points which are contemporaneously maintained by defendants from mines in central Springfield district, Fulton, Peoria County and southern Illinois, eastern and western Kentucky and West Virginia to the same or related destination points and subject the complainants to unreasonable prejudice and disadvantage, as well as discrimination, and are, with other adjustments cited, unduly preferential and advantageous to its competitors in violation of Section 3 of the act. No time or place has been set for the hearing of the above case.

Adjusts Rates to Lakes from Clinchfield

The Interstate Commerce Commission released its decision Oct. 23 in Docket 17136, Clinchfield Coal Corp. vs. Carolina, Clinchfield & Ohio Ry. et al., adjusting rates from mines of that company to Toledo and Toledo docks for transshipment by vessels. The Commission said: "We find that the rates assailed to Toledo and Toledo docks for transshipment by vessel are, and for the future will be, unduly prejudicial to the extent that they exceed, or may exceed, from Clinchco the rate contemporaneously maintained on lake cargo coal, in carloads, to the same destinations from mines in defendant's Big Sandy district, and from Dante and Clinchfield the rate contemporaneously maintained on lake-cargo coal, in carloads, to the same destinations from Clinchco by more than 15c. per net ton."

Petition for Rate Cut Dismissed By Idaho Commission

The Teton Coal Co.'s "supplemental complaint," seeking a reduction in coal freight rates from those established by the Idaho Utilities Commission two years ago, has been dismissed by the Commission, granting a motion entered by attorneys for the defendant, the Oregon Short Line.

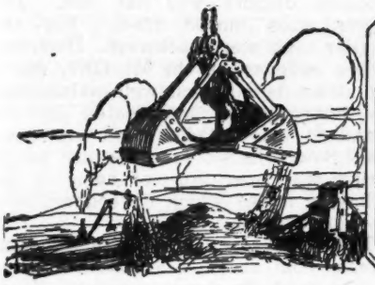
By means of proceedings in the summer of 1924, H. F. Samuels and his associates of the Teton company obtained an order reducing rates on coal from Talbot to practically all points on the O. S. L. in Idaho. June 9, 1926, Mr. Samuels filed a petition asking further reductions.

The railroad company argued that the petition was too late, and that the question of coal rates was a moot one. In its order the Commission found that the "supplemental" petition was in the nature of a petition for rehearing and therefore ruled out because not filed within the statutory period.

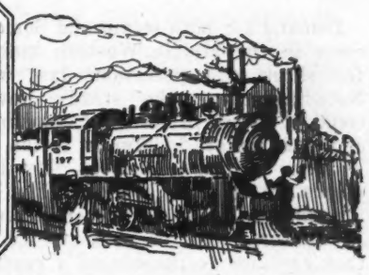
Obituary

Charles F. Sherman, vice-president of the Groveland Coal Mining Co., Peoria, Ill., died Oct. 5 following an attack of typhoid fever. Mr. Sherman was thirty-nine years of age. He was graduated from Ohio State University in 1910 with the degree of mining engineer. For fourteen years he had been with the Groveland Coal Mining Co. and was considered an authority on the Illinois coal fields.

S. P. Woodside, chairman of the Coal, Coke & Iron Ore Committee, Central Freight Association territory, with offices at Pittsburgh, Pa., died last week. Mr. Woodside was well known in the coal industry, having been connected with various railroads in the Pittsburgh district for a number of years.



Production And the Market



Runaway Markets Hit Coal Trade Centers of East; Spot Prices Take Sharp Upturn

The rising tide of foreign and domestic demand for bituminous coal broke bounds last week and culminated in runaway markets in every important trading center from Columbus and Cleveland to the Atlantic seaboard. Quotations on spot tonnage in some cases jumped as much as $1.85 per ton and advances of 25@50c. were common in Eastern territory. This wave of increasing prices, at its crest at Hampton Roads, New York and Boston, diminished in intensity as it rolled inland and had spent its force by the time it reached the Indiana-Ohio state line.

Although the movement caught many procrastinating consumers unaware, it was the natural outcome of conditions which have been gathering strength since the summer. Chiefly as a result of the unusual buying for overseas shipment brought about by the prolonged strike in Great Britain, the curve of spot prices has been moving upward for months. In the face of this development, many buyers choose to gamble on the chances of a collapse in the market. For the time being at least, they have lost.

Hand-to-Mouth Penalties

Excellent transportation service and a large surplus of idle coal miners have been acting as brakes upon the market. These things made the hand-to-mouth buying policy which controlled the coal ordering of many large industrial consumers and some railroads a comparatively safe program. But changes in recent weeks have lessened the effectiveness of these checks. Consumer demand, as represented in the high rates of production which have marked bituminous operations for some time, has absorbed most of the surplus carrying capacity of the railroads and, apparently, the greater part of the surplus labor available.

Continuous operation on a weekly basis in excess of 12,000,000 tons could hardly do otherwise. The industry passed the 12,000,000-ton mark the week ended Oct. 2. During the week ended Oct. 16 the output was estimated by the U. S. Bureau of Mines at 12,376,000 tons, and preliminary loadings figures indicate that last week's output also would exceed 12,000,000 tons. Under such conditions it is not surprising that the permissive-embargo system should be in force at some of the loading piers. While this system may aid in reducing or preventing pier congestion, it also works to make transportation less fluid.

Sharp Increases in Eastern Coals

The bidding of export buyers, lake shippers and industrial consumers and retail distributors for tonnage from three states has grown sharper. Prices asked for West Virginia, Pennsylvania and Kentucky coals naturally have responded to this competitive activity. Some of the largest increases have been registered in the medium low-volatiles and in gas coals—because the offerings of the choicest low-volatiles have been so small. Where, as in New England, consumers insist upon Navy Standard or its equivalent, they have paid dearly for their procrastination.

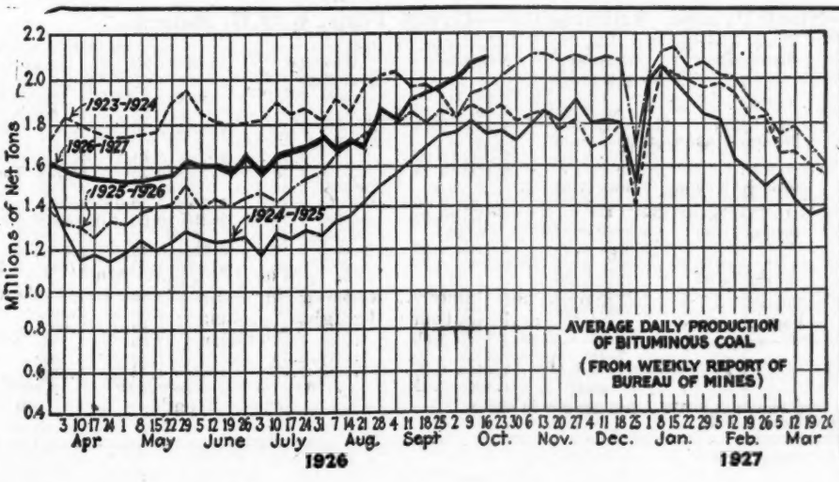
Coal Age Index of spot bituminous price on Oct. 25 was 249 and the corresponding weighted average price was $3.02. This was an increase of 47 points and 57c. over Oct. 18. These levels were the highest reached since April 2, 1923. It must be remembered however, that this index, while truly reflecting the situation in the spot market, standing alone would give an inflated idea of the average realization on all bituminous coal. By far the greater part of the 12,000,000 tons now being mined each week goes to consumers at prices substantially below the top figures now ruling in the spot market.

High Prices Not General

Unquestionably the dilatory buyer—whether he be retailer, lake shipper, railroad fuel agent or industrial purchasing agent—is paying through the nose for his procrastination. But it would be contrary to the facts to assume that the lake trade, for example, which during the week ended Oct. 24 dumped 741,717 tons of cargo and 42,974 tons of vessel fuel at lower ports, has paid $3.50@$4 for the bulk of this tonnage.

Compared with the excitement in the bituminous market of the East, the situation in the anthracite trade seems almost moribund. Nevertheless hard coal demand is active and large enough to take care of a weekly production in excess of 2,000,000 net tons. Moreover, the high prices and short supply of free bituminous is having a favorable reaction on No. 1 buckwheat. Independent quotations on domestic coals show no important changes, but there are persistent rumors that advances will be made the first of the month.

The Connellsville coke market was unaffected last week by the increased strength in coal.



Estimates of Production

(Net Tons)

	1925	1926
BITUMINOUS		
Oct. 2	11,008,000	12,008,000
Oct. 9	11,681,000	12,363,000
Oct. 16	11,770,000	12,376,000
Daily average	1,962,000	2,063,000
Cal. yr. to date	392,679,000	434,689,000
Daily av. to date	(c) 1,605,000	1,777,000
ANTHRACITE		
Oct. 2	14,000	2,052,000
Oct. 9	13,000	2,069,000
Oct. 16	17,000	2,093,000
Cal. yr. to date	(c) 61,299,000	66,160,000
BEEHIVE COKE		
Oct. 9(a)	203,000	208,000
Oct. 16 (b)	226,000	201,000
Cal. yr. to date	(c) 7,666,000	9,450,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Midwest Buyers Gamble on Collapse

Demand for both steam and domestic coals in the Middle Western markets fell short of expectations last week. Notwithstanding the steady upward trend of prices in the East, consumers and retailers are indifferent to the possibilities of the situation. Retailers' stocks are far from abundant, but, having firm faith that the present strength in Eastern coals is only temporary, they continue to gamble on a reaction. Illinois and Indiana coals are neglected. Producers, however, are confident that only a touch of cold weather is needed to cause a return of interest and an accompanying advance in prices.

What little prepared low-volatile coal has been moving through the Chicago gateway has brought $5.50@$5.75; mine-run commands $3.25@$3.50. Any further advances in price are likely to result in a dwindling of shipments with a shift of interest to Franklin County and other high-grade local products. A little high-volatile 4-in. block sold at $3.75@$4.50, the higher figure on specialty coals; and Eastern high-volatile egg ranges from $2.50@$3.50. The anthracite market is strong and demand is increasing. The coke trade also displays notable firmness.

Mining Fields Feel Slump

The full force of the midmonth slump in domestic buying was felt in the Illinois and Indiana fields last week. Southern Illinois "no bill" accumulations were increased by the addition of large blocks of lump and egg. At the same time, some mines still reported a backlog of unfilled orders. Harrisburg fared the best of the southern group, largely because of railroad demand. Stripping operations, of course, enjoyed the greatest running time and were most successful in meeting western Kentucky competition in the steam trade.

On the whole, the situation in the Duquoin district was not bad. The larger sizes moved freely, but the smaller coals were backward. Domestic orders increased at the Mt. Olive mines and steam demand was well maintained. No improvement was noted in the Standard field. Prices still are ruinously low. Labor troubles are interfering with operations of some of the Belleville mines which have gone on a co-operative basis.

The better grades of domestic bituminous coal are in seasonable demand in the local St. Louis market. There is little call for anthracite, however, and buying elsewhere has drained the market of free smokeless tonnage. Country buyers favor the medium grades, with western Kentucky continuing its gains in rural communities both east and west of the Mississippi River. Local wagon steam trade is heavier, but carload business has been slowing up. Steam nut seems to be in good demand at the Missouri River crossings.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Oct. 26 1925	Oct. 11 1926	Oct. 18 1926	Oct. 25 1926†
Smokeless lump	Columbus	$4.85	$5.25	$5.50	**$5.50@$6.00**
Smokeless mine run	Columbus	2.50	2.60	2.65	**3.75@ 4.00**
Smokeless screenings	Columbus	2.05	1.40	1.40	**2.50@ 2.75**
Smokeless lump	Chicago	5.75	5.50	5.50	5.25@ 5.75
Smokeless mine run	Chicago	2.25	3.00	3.10	**3.25@ 3.50**
Smokeless lump	Cincinnati	6.00	5.00	5.50	5.25@ 5.75
Smokeless mine run	Cincinnati	2.50	2.95	2.95	**3.00@ 3.50**
Smokeless screenings	Cincinnati	2.00	2.35	2.50	**2.50@ 2.75**
*Smokeless mine run	Boston	4.60	6.00	6.50	**7.25@ 7.50**
Clearfield mine run	Boston	1.90	2.45	2.55	**3.75@ 4.00**
Cambria mine run	Boston	2.25	2.60	2.65	**4.00@ 4.25**
Somerset mine run	Boston	2.00	2.00	2.20	**4.00@ 4.25**
Pool 1 (Navy Standard)	New York	2.85	2.85	2.85	**3.25@ 3.75**
Pool 1 (Navy Standard)	Philadelphia	2.65	2.75	2.85	**3.25@ 3.50**
Pool 1 (Navy Standard)	Baltimore	2.15	2.25	2.55	**3.00**
Pool 9 (Super. Low Vol.)	New York	2.20	2.35	2.50	**3.15@ 3.50**
Pool 9 (Super. Low Vol.)	Philadelphia	1.95	2.25	2.60	**3.00@ 3.25**
Pool 9 (Super. Low Vol.)	Baltimore	1.95	1.95	2.50	**2.75**
Pool 10 (H.Gr.Low Vol.)	New York	2.00	2.05	2.35	**3.00@ 3.35**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	1.85	2.00	2.35	**2.75@ 3.00**
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.80	1.85	2.30	**2.60**
Pool 11 (Low Vol.)	New York	1.80	1.90	2.15	**2.50@ 2.75**
Pool 11 (Low Vol.)	Philadelphia	1.70	1.80	1.95	**2.35@ 2.50**
Pool 11 (Low Vol.)	Baltimore	1.55	1.80	2.20	**2.40**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.55	1.75	2.60	**2.50@ 2.75**
Pool 54-64 (Gas and St.)	Philadelphia	1.60	2.00	2.10	**2.85@ 3.00**
Pool 54-64 (Gas and St.)	Baltimore	1.55	1.85	2.10	**2.50**
Pittsburgh sc'd gas	Pittsburgh	2.75	2.80	3.35	**4.00@ 4.50**
Pittsburgh gas mine run	Pittsburgh	2.30	2.45	2.85	**3.25@ 3.50**
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.05	2.20	**2.60@ 2.75**
Pittsburgh slack (Gas)	Pittsburgh	1.40	1.50	1.75	**2.00@ 2.25**
Kanawha lump	Columbus	2.60	3.00	3.25	**3.50@ 4.00**
Kanawha mine run	Columbus	1.70	1.95	2.25	**3.00@ 3.25**
Kanawha screenings	Columbus	1.30	1.15	1.15	**1.75@ 1.90**
W. Va. lump	Cincinnati	2.75	3.25	3.35	**3.25@ 4.00**
W. Va. gas mine run	Cincinnati	1.60	2.00	1.95	**2.00@ 4.00**
W. Va. steam mine run	Cincinnati	1.55	1.80	1.85	**1.90@ 4.00**
W. Va. screenings	Cincinnati	1.15	1.20	1.35	**1.50@ 3.00**
Hocking lump	Columbus	2.70	2.60	2.85	**3.00@ 3.50**
Hocking mine run	Columbus	1.65	1.55	1.80	**1.75@ 2.00**
Hocking screenings	Columbus	1.30	1.20	1.20	**1.50@ 1.60**
Pitts. No. 8 lump	Cleveland	2.35	2.60	2.75	**3.25@ 4.00**
Pitts. No. 8 mine run	Cleveland	1.95	2.05	2.05	**2.50@ 2.75**
Pitts. No. 8 screenings	Cleveland	1.35	1.35	1.50	**2.05@ 2.50**

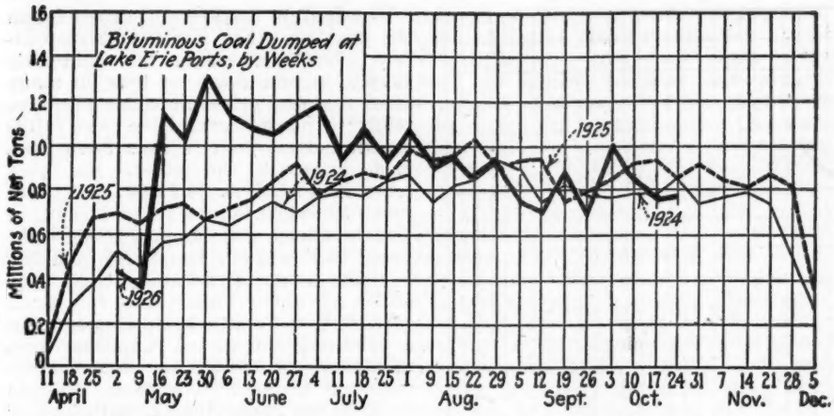
Midwest	Market Quoted	Oct. 26 1925	Oct. 11 1926	Oct. 18 1926	Oct. 25 1926†
Franklin, Ill. lump	Chicago	$3.25	$3.25	$3.25	$3.25
Franklin, Ill. mine run	Chicago	2.35	2.40	2.40	2.35@ 2.50
Franklin, Ill. screenings	Chicago	1.60	1.50	1.50	1.40@ 1.65
Central, Ill. lump	Chicago	2.85	2.85	2.85	2.75@ 3.00
Central, Ill. mine run	Chicago	2.20	2.20	2.20	2.15@ 2.25
Central, Ill. screenings	Chicago	1.55	1.40	1.45	1.35@ 1.55
Ind. 4th Vein lump	Chicago	3.10	2.85	3.05	3.00@ 3.10
Ind. 4th Vein mine run	Chicago	2.35	2.25	2.25	2.15@ 2.35
Ind. 4th Vein screenings	Chicago	1.60	1.50	1.50	1.45@ 1.60
Ind. 5th Vein lump	Chicago	2.35	2.65	2.65	2.50@ 2.85
Ind. 5th Vein mine run	Chicago	1.95	2.00	2.00	1.90@ 2.10
Ind. 5th Vein screenings	Chicago	1.40	1.30	1.35	1.25@ 1.50
Mt. Olive lump	St. Louis	2.50	2.60	2.60	2.50@ 2.75
Mt. Olive mine run	St. Louis	2.00	2.25	2.25	2.25
Mt. Olive screenings	St. Louis	1.75	1.25	1.25	1.25
Standard lump	St. Louis	2.25	2.15	2.15	2.10@ 2.25
Standard mine run	St. Louis	1.80	1.80	1.80	1.75@ 1.85
Standard screenings	St. Louis	1.15	1.05	1.05	1.00@ 1.10
West Ky. block	Louisville	2.00	2.35	2.40	2.25@ 2.60
West Ky. mine run	Louisville	1.35	1.30	1.30	1.15@ 1.50
West Ky. screenings	Louisville	1.05	.85	.85	**.85@ 1.10**
West Ky. block	Chicago	2.05	2.10	2.10	2.00@ 2.25
West Ky. mine run	Chicago	1.25	1.15	1.15	1.00@ 1.35
South and Southwest					
Big Seam lump	Birmingham	2.25	2.35	2.35	2.25@ 2.50
Big Seam mine run	Birmingham	1.80	1.85	1.85	1.75@ 2.00
Big Seam (washed)	Birmingham	1.85	1.90	2.05	1.85@ 2.25
S. E. Ky. block	Chicago	3.00	3.35	3.75	**3.75@ 4.25**
S. E. Ky. mine run	Chicago	1.95	1.75	2.00	**2.00@ 2.50**
S. E. Ky. block	Louisville	2.75	3.25	3.50	**3.50@ 4.00**
S. E. Ky. mine run	Louisville	1.50	1.75	2.00	**2.25@ 2.85**
S. E. Ky. screenings	Louisville	1.25	1.30	1.30	**1.25@ 1.75**
S. E. Ky. block	Cincinnati	3.25	3.25	3.35	**3.25@ 3.75**
S. E. Ky. mine run	Cincinnati	1.60	1.70	1.85	**2.00@ 2.50**
S. E. Ky. screenings	Cincinnati	1.20	1.20	1.35	**1.50@ 2.00**
Kansas lump	Kansas City	4.60	4.60	4.60	4.50@ 4.75
Kansas mine run	Kansas City	3.00	3.00	3.00	3.00
Kansas screenings	Kansas City	2.30	2.35	2.35	2.35

* Gross tons, f.o.b. vessel, Hampton Roads
† Advances over previous week shown in **heavy type**, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Oct. 26, 1925 Independent	Oct. 26, 1925 Company	Oct. 18, 1926 Independent	Oct. 18, 1926 Company	Oct. 25, 1926† Independent	Oct. 25, 1926† Company
Broken	New York	$2.34	‡	$8.20@$8.95	.....	$8.50@$9.25	.....	$8.50@$9.25
Broken	Philadelphia	2.39	‡	‡	$9.25	8.50@ 9.15	$9.25	8.50@ 9.15
Egg	New York	2.34	‡	8.65@ 8.90	9.00@ 9.25	8.75@ 9.25	8.85@ 9.25	8.75@ 9.25
Egg	Philadelphia	2.39	‡	‡	9.25@ 9.50	9.00@ 9.15	9.00@ 9.50	9.00@ 9.15
Egg	Chicago*	5.06	$9.50@10.00	8.03@ 8.28	8.14	8.13	8.14	8.13
Stove	New York	2.34	‡	9.15@ 9.40	9.50@10.00	9.25@ 9.50	9.50@10.00	9.25@ 9.50
Stove	Philadelphia	2.39	‡	‡	9.75@10.20	9.35@ 9.50	9.75@10.20	9.35@ 9.50
Stove	Chicago*	5.06	10.00@11.00	8.48@ 8.80	8.70	8.33@ 8.58	8.70	8.33@ 8.58
Chestnut	New York	2.34	‡	8.65@ 8.95	9.25@ 9.50	8.75@ 9.15	9.25@ 9.50	8.75@ 9.15
Chestnut	Philadelphia	2.39	‡	‡	9.25@10.00	9.00@ 9.15	9.25@10.00	9.00@ 9.15
Chestnut	Chicago*	5.06	10.00@11.00	8.50@ 8.75	8.39	8.33@ 8.53	8.39	8.33@ 8.53
Pea	New York	2.22	‡	5.00@ 6.25	6.25@ 6.50	6.00@ 6.50	**6.00@ 6.75**	6.00@ 6.50
Pea	Philadelphia	2.14	‡	5.00@ 6.25	6.30@ 6.75	6.00@ 6.50	6.30@ 6.75	6.00@ 6.50
Pea	Chicago*	4.79	5.50@ 6.00	5.50@ 6.00	6.03	6.10	6.03	6.10
Buckwheat No. 1	New York	2.22	‡	2.50@ 2.75	2.15@ 2.50	2.50@ 3.50	**2.25@ 2.50**	2.50@ 3.50
Buckwheat No. 1	Philadelphia	2.14	‡	2.50@ 3.00	2.25@ 2.50	2.50@ 3.00	2.25@ 2.50	2.50@ 3.00
Rice	New York	2.22	‡	2.25	1.80@ 1.95	2.00@ 2.25	*1.60@ 1.95*	2.00@ 2.25
Rice	Philadelphia	2.14	‡	2.25	1.85@ 2.00	1.75@ 2.25	1.85@ 2.00	1.75@ 2.25
Barley	New York	2.22	‡	2.25	1.25@ 1.50	1.50@ 1.75	1.25@ 1.50	1.50@ 1.75
Barley	Philadelphia	2.14	‡	1.50	1.65@ 1.75	1.50@ 1.75	1.65@ 1.75	1.50@ 1.75
Birdeye	New York	2.22	‡	‡	1.40@ 1.65	2.00	*1.25@ 1.60*	2.00

*Net tons, f. o. b. mines. † Advances over previous week shown in **heavy type**; declines in *italics*.
‡Quotations withdrawn because of strike which started Sept. 1, 1925.



Kentucky Demand Widens

Further expansion marked the course of the market for Kentucky coals the past week. Cooler weather in Louisville increased consumption at that center. Lake and tidewater movements are taking substantial quantities of eastern Kentucky coal and that section of the state also is shipping more heavily to Northwestern and Middle Western states because offerings of West Virginia coals are so scant. Car supply is fair; the difficulties encountered are more in the type of equipment set out than in an actual shortage.

Prices on eastern Kentucky have taken another advance. The only change in western Kentucky quotations on the Louisville market is in screenings, which have advanced to 85c.@ $1.10. Eastern Kentucky block is $3.50@$4, with occasionally sales above the last-named figure. Egg and lump prices are up 25c. Mine-run has increased to $2.25@$2.85 and slack $1.25 @$1.75.

Docks at the Head of the Lakes are busy rushing shipments to buyers who kept out of the market until the last moment. Railroad service to date, however, has been equal to the rush demands placed upon it. Buying is confined to no particular class of consumers. Large industrial plants are anxious to build up their stocks and retailers are pressed for deliveries by the householder. Competition between the docks for any stray public utility business not covered by contract is unusually keen.

Pocahontas a Leader

Perhaps the outstanding feature of the market is the heavy demand for Pocahontas and other smokeless coals. Docks are warning their customers that early ordering is extremely desirable as many receivers have been unable to increase their orders at the mines. Prepared smokeless is firm at $8 and mine-run brings $5.25; slack is $4.25. Anthracite, too, is finding a wider market. The run of coal from the lower ports continues heavy.

Only moderate activity, characteristic of comparatively mild weather, prevails in the domestic market in the Twin Cities. Steam buyers are rather backward, due to the handicap placed on general industrial activity by a wet autumn. Prices, however, are holding steady. A further advance of 50c. on all grades of soft coal went into effect in Milwaukee last week, with sole dependence placed on the docks for supplies. Some disquiet is felt with the end of lake navigation in sight. Demand for anthracite is brisk.

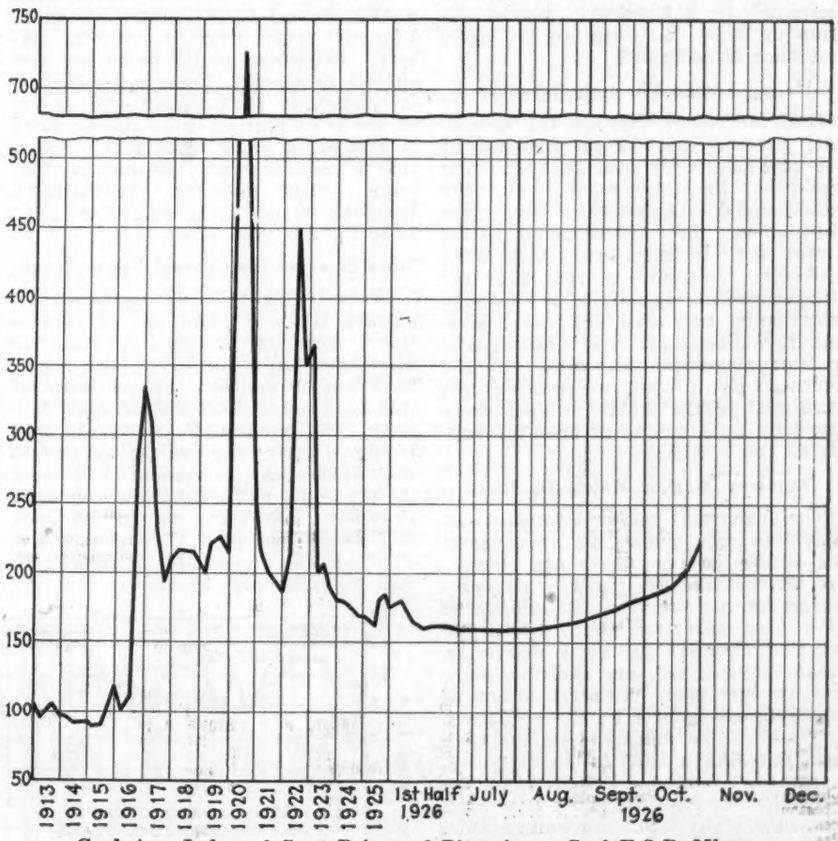
Unevenness in demand is held responsible for the failure of Southwestern operators to make midmonth advances in prices, but increases are predicted for Nov. 1. As an example of the mixed conditions now prevailing, one Kansas operator reported that he was three weeks behind on lump orders while another producer was trying to move a surplus of the same size. Complaint is made that small-capacity cars are scarce. Stripping operators are recovering from the recent flood conditions.

Weather Hits Colorado Demand

Warm weather is making Colorado business spotty. Retailers show little disposition to increase yard supplies as long as the householders are indifferent to the approach of winter. Possibilities of a car shortage fail to stir them into action. Steam demand, however, is fairly active and the mines as a whole are operating 60 to 65 per cent of capacity. Weather also is cutting into the Utah movement of domestic sizes, but the demand for steam coal is normal.

Tidewater demand is the controlling factor in the Cincinnati situation. The insistent calls for tonnage from the seaboard is lifting prices to still higher levels in both the low- and high-volatile fields. Except on smokeless, however, Western buyers decline to meet the figures offered for Eastern movement. As a result, the East bid up to $4 for West Virginia gas mine-run, but the West would not pay over $2.25. This latter figure was the maximum on steam mine-run for Western movement, against $3.50 @ $4 for tidewater shipments. Western prices on slack were 50c.@$1 under seaboard bids.

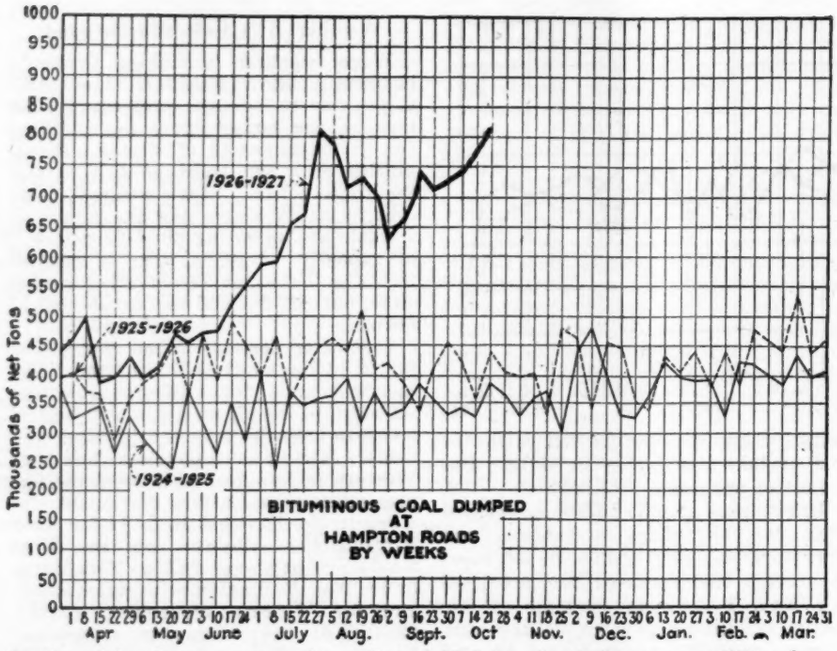
The one exception to this refusal of the West to pay top figures was found in the lake trade. Late cargoes and the possibility of an early closing of navigation sent some of the procras-



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Oct. 25	Oct. 18	Oct. 11	Oct. 4	Oct. 26	Oct. 27
Index	249	202	192	188	178	176
Weighted average price	$3.02	$2.45	$2.33	$2.27	$2.15	$2.12

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.


1926-1927
1925-1926
1924-1925
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Thousands of Net Tons
Apr May June July Aug. Sept. Oct Nov. Dec. Jan. Feb. Mar.

tinating lake buyers scurrying after tonnage. Little change has appeared in quotations on prepared smokeless, but mine-run now commands up to $3.50 and slack up $2.75, with an occasional sale at $3. Retail prices on smokeless lump at Cincinnati have been increased to $10.50@$11, bituminous lump to $7.50; mine-run to $5.75@$6 and slack to $4.50@$5.

Heavy Traffic Through Gateway

Coal movement through the Cincinnati gateway showed an increase of 388 cars last week over the preceding week, but the total number of loads interchanged—14,230—was 908 less than during the corresponding period a year ago. Included in the total were 2,660 cars en route to the lakes for transshipment. Louisville & Nashville interchange increased 782 cars; Norfolk & Western, 53 cars; Cheseapeake & Ohio movement decreased 410 and Southern Ry., 37 cars. Fewer empties were sent to the mines; in fact there has been a tightening of open-top supply on the L. & N.

Runaway Market Makes Its Bow

The runaway market forecast at Columbus has made its appearance. All classes of consumers are clamoring for coal and are ready to pay premiums for car numbers. Retailers who have been carrying small stocks are pressing shippers for early deliveries. Steam buyers, too, are showing more concern, but their tentative offers of contracts are ignored by the producers. As most of the industrial buyers have been pursuing a hand-to-mouth policy, a jam is imminent. Quotations on Hocking lump have increased 25 to 50c.; mine-run is up 15c.; screenings, 35c. Southern Ohio production is expanding.

Northern and eastern Ohio also saw skyrocketing prices last week. Quotations on No. 8 slack and nut-and-slack advanced 50c. to $1; mine-run, 50c. to 75c., and on lump, nearly $1. Both steam and domestic demand seems to be coming from all classes of consumers and more mines are reopening, aided by the lighter competition from West Virginia mines caused by the heavy demand from the East. Output in the No. 8 field during the week ended Oct. 16 approximated 297,000 tons, or 42 per cent of potential capacity.

Unabated demand in the Pittsburgh district caused further sharp advances. Line and railroad activity was the feature. Shipments to tidewater are now subject to permits. Best gas mine-run is quoted at $3.25@$3.50 and is expected to go higher; three-quarter lump is $4@$4.50; slack, $2@$2.25. Steam coal is keeping step in the push for tonnage, with mine-run $2.60@$2.75. Domestic grades bring $3.25 for 1¼ in., $3.50 for 2-in. and $4 for 3-in.

More Demand for Central Pennsylvania

Central Pennsylvania continues its upward climb in price and in production. Inquiries are coming from all directions. New England plants which have not recognized the existence of this field since 1920 are seeking tonnage. Railroads demand more coal. Loadings during the week ended Oct. 18 were 18,008 cars, as against 17,943 cars the preceding week. Prices have jumped 15 to 65c. Pool 1 was quoted last week at $3.30@$3.50; pool 71, $3.25; pool 9, $2.80@$2.90; pool 10, $2.50@$2.75; pool 11, $2.25; pool 18, $2.

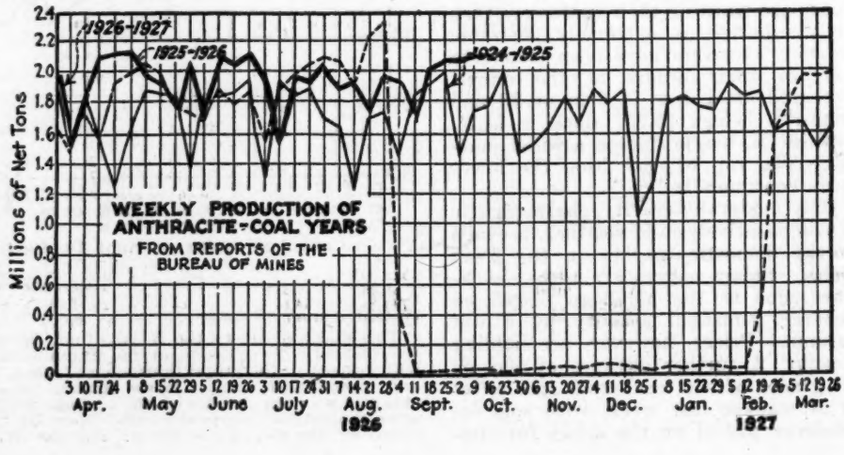
The Buffalo market still drags far in the rear of other Eastern trade centers. Notwithstanding the tightening supply, buyers delay so long in many cases that the prices at which they are ready to place orders have been withdrawn before their wishes have been made known to the mines. Fairmont lump is quoted at $3.25@$3.50; mine-run, $2.65@$2.90; slack, $2@$2.25; Youghiogheny gas lump, $3.50@$3.75; slack, $2.25@$2.50; Pittsburgh and No. 8 steam lump, $3@$3.25; slack, $2@$2.25; Allegheny Valley mine-run, $2.25@$2.50. Low-volatile lump ranges from a minimum of $4 on Cambria to a maximum of $6.25 on Pocahontas; mine-run from $2.75 on West Virginia to $3.25 on Pennsylvania, with buying somewhat improved.

New England spot transactions are not heavy in volume, but quotations are going up by leaps and bounds. Last week any West Virginia pool 1 coal readily brought $7.50 gross at the Hampton Roads piers and $8.50 was paid for spot coal on cars at Boston. On Monday it was reported that sales were made at $8.75 f.o.b. vessel at Hampton Roads, with quotations on-car Boston at $9.75. Congestion, not only at Hampton Roads but at the Northern tidewater ports, is adding to the rising panic among buyers who have delayed too long. More conservative factors in the New England trade have withdrawn from the spot market and are devoting their efforts to meeting commitments already taken.

New England All-Rails Stronger

Labor complications as well as the overflow of the surplus demand into central Pennsylvania have boosted the market in all-rail coals. Within a few days the spot prices on coal for New England delivery jumped from $2.50 to $4. Offerings in any quantity could command a still higher figure. Tidewater deliveries from Philadelphia are cut down by the permissive-embargo system. All the elements that enter into a first-class squeeze now are present.

Embargoes at Baltimore and Philadelphia diverted considerable tonnage to the New York piers the last half of the past week, but the increased receipts could not stop the upward movement in prices. Many operators are sold so far ahead that they decline to quote on future deliveries. Inland demand seems strong enough to absorb



Car Loadings and Supply

	Cars Loaded—All Cars	Cars Loaded—Coal Cars
Week ended Oct. 9, 1926.....	1,184,862	222,799
Week ended Oct. 2, 1926.....	1,185,524	220,924
Week ended Oct. 10, 1925.....	1,106,099	184,331
Week ended Oct. 3, 1925.....	1,112,463	174,317

	Surplus Cars—All Cars	Surplus Cars—Coal Cars	Car Shortages—All Cars	Car Shortages—Coal Cars
Oct. 8, 1926..	100,069	20,194	.....	.....
Sept. 30, 1926	114,730	27,519	.....	.....
Oct. 8, 1925..	136,009	58,256	.....	.....

any surplus tonnage. Contract buyers are demanding full quotas and seeking additional coal. At the end of the week pool 1 Pocahontas and New River was quoted by New York factors at $4.50@$4.75 net, f.o.b. mines and $7.25@$7.50 gross at Hampton Roads.

Philadelphia is not behind New York in activity. Shippers of the higher grades of coal no longer canvass the market for orders. As a result, some of the medium and lower grades are crowding to a bigger place in the sun. Many mines long down are reopening, but labor scarcity is holding this movement somewhat in check. Dilution of car supply also is having its effect, particularly on the Baltimore & Ohio. Prices have jumped 45 to 80c., to the discomfiture of spot buyers, including some of the railroads. The biggest increase was on pools 54 and 64. Export trade is active.

Boom Comes to Baltimore

Conditions in the Baltimore export trade last week were hectic. Stability in quotations fled the market, but the end of each swing left spot price levels higher. Week-end quotations were 15 to 50c. above the range of the preceding week. This discouraged some domestic inquiry, but the pressure for export tonnage was so great that shippers shed no tears over the plight of the local and inland industrial consumers. All loading records at the port were broken during the first nineteen days of the month, when 86 vessels took on 552,125 gross tons of cargo coal for export.

Pier and bunker prices at Hampton Roads went up 50c. to $1.10 per ton last week, with the sharpest increase on pools 5, 6 and 7. Navy Standard sold up to $7.50 and still higher bids were made for free tonnage, but there was little spot coal to be had. The rush of export business has caused some talk of a revival of the tidewater coal exchanges at this port. Coal for household consumption is selling at $11, with a possibility that the first of next month will see $12 or $13 asked.

Cool weather brightened the retail outlook at Birmingham last week and led to a slight increase in spot sales and contract shipments from the mines. Demand, however, is spotty. The steam coal market is showing a healthy trend, with an increase in inquiries and some improvement in spot sales. As for months past, coking coals have the edge on the market and the better grades, especially Black Creek, are none too plentiful. The coke market is maintaining its position. Both spot and contract foundry coke are held at $6. Oven quotations on domestic sizes are: Egg, $5; stove, $4.50; nut, $4.

Absorbs All Anthracite Offerings

The New York market is taking all the domestic anthracite offered, but local retail buyers are drawing the bulk of their supplies from company shippers and ignore high premium coal. All the major sizes are moving well, with nut and stove the favorites. Increased prices on bituminous coal have reacted favorably on the sale of No. 1 buckwheat. Independent quotations on this size have advanced.

Philadelphia reports a decided improvement in the hard coal trade, with wholesale prices unchanged. A slowing up in deliveries from the mines is spurring retail distributors to increase their orders. As a result some of the independent shippers are sold up for the month on stove and nut. Company shippers can no longer promise prompt shipments of these sizes. An increase in independent quotations next month seems assured. Steam sizes, with the exception of No. 1 buckwheat, are moving readily. There are indications, however, that buckwheat will soon feel the effects of the strong demand and high prices ruling in soft coal.

The Baltimore anthracite trade is unexciting. Receipts are ample and there is no talk of shortage. Retail deliveries are about normal. Independent quotations are slightly stiffer. The local sale of anthracite at Buffalo is somewhat below the seasonal average. The week ended Oct. 21 witnessed an increase in lake dumpings at that port, when 70,000 net tons were loaded for the upper ports. Of this quantity 23,700 tons cleared for Milwaukee, 18,300 tons for Chicago, 14,000 tons for Duluth and Superior, 7,500 tons for Sheboygan and 6,500 tons for Waukegan.

Connellsville Coke Trade Dormant

The Connellsville coke market was featureless last week. Save for a fair call for heating coke, demand was almost absent. Spot furnace coke was $3.50@$3.75, with business light. Furnace interests seeking coke on contract to the end of the year have been unable to obtain acceptable prices.

Spot foundry coke is up 25c. at $4.50 @$5. It is reported that a few ovens were put out last week, and more are expected to follow, with the blame laid to the high realization on coal. There was a slight decrease in coke output in the Connellsville and Lower Connellsville region during the week ended Oct. 16.

Utilities Consume More Coal As Power Output Gains

Public-utility power plants in the United States consumed 3,451,499 net tons of coal in August, 1926, according to the U. S. Geological Survey. This compares with 3,364,430 tons in the preceding month. Fuel oil used by these plants in August totaled 753,955 barrels, against 700,884 in July.

The average daily production of electricity by public-utility power plants in the United States in August was 197,430,000 kw.-hr., which is about 3.5 per cent larger than the figure for July.

Improved water supply in power streams, brought about by precipitation in August, caused the average daily production of electricity by the use of water power in August to return to about normal.

The curve of average daily total production of electricity for 1926 indicates that the usual increase in demand for electricity during the latter half of the year has started.

Bituminous Coal Loaded Into Vessels at Lake Erie Ports During Season to End of September

(In Net Tons)

Ports	Railroads	1926 Cargo	1926 Fuel	1926 Total	1925 Cargo	1925 Fuel	1925 Total	1924 Cargo	1924 Fuel	1924 Total
Toledo	Hocking Valley	5,788,873	168,552	5,957,425	6,046,551	174,963	6,221,514	4,867,888	143,569	5,011,457
	Big Four	1,403,616	8,844	1,412,460	1,156,949	6,664	1,163,613	9,036	95	9,131
	N. Y. C.-Ohio Central Lines	1,588,279	81,550	1,669,829	727,286	55,832	783,118	44,905	1,412	46,317
	Baltimore & Ohio	1,964,909	57,274	2,022,183	2,406,714	72,900	2,479,614	1,445,978	43,951	1,489,929
Sandusky	Pennsylvania	5,081,925	148,678	5,230,603	4,192,755	124,872	4,317,627	2,792,109	85,872	2,877,981
Huron	Wheeling & Lake Erie	404,128	25,269	429,397	498,275	24,145	522,420	546,853	28,030	574,883
Lorian	Baltimore & Ohio	1,377,167	103,013	1,480,180	815,041	105,445	920,486	1,422,592	112,642	1,535,234
Cleveland	Pennsylvania	326,141	129,092	455,233	275,650	131,382	407,032	1,161,296	136,106	1,297,402
	Erie	.....	.....	.....	18,138	1,252	19,390	244,156	8,109	252,265
Fairport	Baltimore & Ohio	523,405	67,999	591,404	580,925	77,860	658,785	402,002	69,646	471,648
Ashtabula	New York Central	166,009	80,593	246,602	279,486	68,146	347,632	702,322	90,587	792,909
	Pennsylvania	711,365	54,889	766,254	572,648	69,691	642,339	875,088	62,676	937,764
Conneaut	Bessemer & Lake Erie	1,406,958	194,050	1,601,008	890,885	173,612	1,064,497	1,251,550	162,466	1,414,016
Erie	Pennsylvania	324,435	62,805	387,240	207,545	44,488	252,033	461,396	63,316	524,712
Total		21,067,210	1,182,608	22,249,818	18,668,848	1,131,252	19,800,100	16,227,171	1,008,477	17,235,648
Storage loading		60,142*	774	60,916	33,017*	1,048	34,065	182,060*	4,940	187,000

*Coal loaded into vessels in December of previous year, after close of navigation and forwarded from Lake Erie ports during year indicated.
Compiled by Ore & Coal Exchange, Cleveland, Ohio; H. M. Griggs, manager.

Foreign Market And Export News

British Buying Boosts Exports From U. S. in September

British buying again kept up exports of bituminous coal from the United States during September. The United Kingdom and North Ireland took 1,531,994 gross tons and the Irish Free State, 223,573 tons. The shipments to Great Britain and Ireland were 46.9 per cent of the total export movement for the month.

September bituminous exports were 189,198 tons greater than the August total. Exports of anthracite coal and coke, however, were slightly smaller—362,754 tons of hard coal in September against 395,978 tons in August; 64,429 tons of coke against 75,286 tons in August.

The distribution of the September shipments was as follows:

To	Anthracite Gr. Tons	Bituminous Gr. Tons	Coke Gr Tons
Greenland	.....	.....	29
Canary Islands	.....	20,825	.....
France	.....	32,160	1,000
Greece	.....	4,270	.....
Irish Free State	.....	223,573	.....
Gibraltar	.....	31,793	.....
Italy	.....	133,577	.....
Netherlands	.....	.....	494
Norway	.....	8,599	.....
Portugal	.....	12,743	.....
Spain	.....	2,682	.....
Turkey in Europe	.....	7,302	.....
Yugoslavia and Albania	.....	1,539	.....
Miquelon and St. Pierre Islands	.....	1,967	.....
United Kingdom and North Ireland	19	1,531,994	2
Canada	354,383	1,198,634	58,572
British Honduras	.....	4	.....
Guatemala	.....	39	3
Honduras	.....	57	.....
Nicaragua	.....	300	.....
Costa Rica	.....	.....	13
Panama	.....	8,920	.....
Salvador	.....	.....	7
Mexico	279	6,662	46
Newfoundland and Labrador	1,393	9,986	.....
Jamaica	.....	38,160	.....
Other British West Indies	25	3,663	.....
Cuba	6,562	48,568	863
Dominican Republic	.....	1,607	2
French West Indies	.....	3,221	.....
Dutch West Indies	.....	7,672	.....
Barbados	50	272	.....
Trinidad and Tobago	.....	3,911	.....
Virgin Islands of the United States	.....	3,685	.....
Argentina	.....	121,554	219
Brasil	.....	103,471	532
Chile	.....	.....	2,536
Colombia	42	20	6
Ecuador	.....	2,376	.....
British Guiana	.....	2,182	.....
Peru	.....	7,050	28
Uruguay	.....	11,025	.....
Venezuela	.....	13,540	77
Falkland Islands	.....	7,085	.....
Egypt	.....	81,230	.....
Algeria and Tunis	.....	20,629	.....
Other Portuguese Africa	.....	6 026	.....
New Zealand	.....	1 007	.....
Other French Africa	.....	16,389	.....
Total	362,754	3,736,969	64,429

France Feels Pinch

Paris, France, Oct. 14.—Although the situation does not seem altered on the surface, there is a growing shortage of fuels in sections of France remote from the mines. Mild weather has kept down domestic buying in the Paris metropolitan area, but prices of ovoids will be increased 25 fr. tomorrow to cover advances already made by the French and Belgian manufacturers.

Effective Oct. 16, the O. H. S. has announced the following prices on indemnity fuels to be delivered through Rhine ports: Through-and-through for gas-making, 147 fr.; semi-bituminous smalls, 126 fr.; large coke, 250 fr.; crushed coke, 210 fr. for 60x90 mm., 275 fr. for 40x60 mm. and 210 fr. for 20x40 mm. Zone rebates of 1@1.50 fr. are allowed to departments the most distant from the Rhine ports.

During September the O. H. S. received 240,400 metric tons of coal and 145,700 tons of coke. During the same month the O. R. C. A. received 127,621 tons of coke from the Ruhr. Rumors that October prices on coke will be reduced still are current.

The Belgian market, according to word from Brussels, continues firm and active. Inland demand is even stronger because consumers who had been waiting for the end of the British strike are now obliged to turn to home producers. It is chiefly in industrial coals that the revival of the demand is notable. Demand for household coals is satisfactory.

Export Clearances, Week Ended Oct. 21

FROM HAMPTON ROADS

	Tons
For United Kingdom:	
Span. Str. Artagan Mendi	7,039
Br. Str. Gibraltar	6,387
Grk. Str. Kalypso Vergotti	7,317
Span. Str. Altuna Mendi	8,579
Br. Str. Willowpool	7,548
Br. Str. Otarama	8,327
Du. Str. Dubhe	4,486
Br. Str. Barrhill	7,155
Ger. Str. China	5,621
Br. Str. Hindustan	7,157
Grk. Str. Hadiotis	7,500
Br. Str. Clearpool	5,960
Br. Str. Nessian	7,807
Ital. Str. Villa Adam	6,867
Ital. Str. Nasco	7,136
Br. Str. Daybeam	4,462
Span. Str. Mar Caspio	4,307
Grk. Str. Eftichia	4,882
Du. Str. Ellewoutsdijk	5,135
Br. Str. Glofield	6,632
Amer. Str. Frieda	4,567
Br. Str. Grelden	7,026
Nor. Ms. Austard	6,333
Ger. Str. Kersten Miles	8,471
Jug.-Slav. Str. Srgj	5,222
For England:	
Bel. Str. Australier, for London	7,030
Br. Str. Westborough, for London	5,567
Br. Str. Dunclutha, for Mersey	5,664
Br. Str. Roseworth, for Tyne	3,402
Br. Str. Maid of Syra, for Tyne	5,431
Br. Str. Blairesk, for Dover	5,047
Br. Str. Antonio Vrondisis, for Manchester	4,223
Br. Str. Justin, for Liverpool	5,212
For Scotland:	
Br. Str. Norman Monarch, for Glasgow	6,853
For Italy:	
Ital. Str. Maria Enrica, for Naples	9,842
Ital. Str. Salina, for Genoa	6,804
For Spain:	
Br. Str. Trefalgar, for Gibraltar	6,626
For British West Indies:	
Swed. Str. Roslagen, for Trinidad	2,729
For Brazil:	
Br. Str. Easway, for Pernambuco	7,785
Ital. Str. Valdirosa, for Rio Janeiro	6,263
Amer. Str. Circinus, for Pernambuco	7,394
For Peru:	
Peru. Str. Apurimac, for Callao	2,986
For Argentine:	
Nor. Str. Folkvard, for Buenos Aires	4,360
Br. Str. Northborough, for Buenos Aires	4,644
Ital. Str. Valperga, for Buenos Aires	6,626
For Portugal:	
Br. Str. Medmenham, for Lisbon	4,958
For France:	
Br. Str. Workworth, for Havre	7,259
For Wales:	
Amer. Str. Surico, for Cardiff	4,416

FROM BALTIMORE

For England (to Queenstown for orders unless otherwise specified):	
Br. Str. Caithness	5,880
Br. Str. Benvannock	7,637
Dut. Str. Procyon, for Barry Poads, Wales, for orders	4,831
Br. Str. Achilles, for Liverpool	12,287
Br. Str. Lady Benda, for Swansea, Wales, for orders	4,704
Br. Str. Oxonian	7,852
Br. Str. Trevilley	6,629
Br. Str. Clan McCauley	3,306
Br. Str. Ookworth, for Barry Roads, Wales, for orders	7,243
Br. Str. Tarter Prince, for Lands End	6,705
Am. Str. Beatus	7,523
Br. Str. Gwynmead	5,714
Br. Str. Wellpack, for London	2,705
Br. Str. Dumfries	5,653
Br. Str. City	3,975
Ital. Str. Valreale	7,235
Br. Str. Leverpool	7,727
Dut. Str. Wilhelm Van Driel, Sr.	3,449
For British West Africa:	
Dan. Str. Agnete Maersk, for Secondee	3,038
For Italy:	
Ital. Str. Spes, for Savona	5,412
For Guadeloupe:	
Am. Schr. Esther Melbourne, for Point Pitre	1,031
For Argentine:	
Nor. Str. Truth, for Ibicuy	4,705
For Egypt:	
Br. Str. Devon City, for Alexandria	6,877

FROM PHILADELPHIA

For United Kingdom:	
Br. Strs. Bedecrag, Kenilworth, Vestalia; Span. Strs. Ariaga Mendi, Arola Mendi, Arinda Mendi; Ital. Strs. Nodice, Adelina; Nor. Str. Adour	——
For Martinique:	
Am. Schr. Edna Hoyt, for Galion Bay	——
For Haiti:	
Br. Str. Emperor, for Fort de France.	——
For Canary Islands:	
Br. Str. Rothely, for Las Palmas	——
For Greece:	
Br. Str. Bedeburn, for Piraeus	——
For Cuba:	
Br. Str. Baron Herrie, for Havana	——
For Algiers:	
Ital. Str. Maria Adele	——
For France:	
Ital. Str. Raffaela	——
For Italy:	
Ital. Str. Color, for Genoa	——
Ital. Str. Ansaldo Quarto, for Savona	——
For Cape Verde Islands:	
Dan. Str. Nordkap, for St. Vincent	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Oct. 14	Oct. 21
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	280,559	275,058
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	185,748	190,017
C. & O. Piers, Newport News:		
Tons dumped for week	224,452	263,320

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Oct. 14	Oct. 21†
Pool 1, New York	$5.50@$5.75	**$6.50@$6.75**
Pool 9, New York	5.10@ 5.40	**6.25@ 6.50**
Pool 10, New York	4.80@ 5.00	**6.00@ 6.25**
Pool 11, New York	4.70@ 4.85	**5.65@ 5.80**
Pool 9, Philadelphia	5.35@ 5.55	**5.85@ 6.05**
Pool 10, Philadelphia	5.05@ 5.25	**5.55@ 5.75**
Pool 11, Philadelphia	4.75@ 4.95	**5.25@ 5.45**
Pool 1, Hamp. Roads	6.50@ 6.75	**7.25@ 7.75**
Pool 2, Hamp. Roads	6.00@ 6.30	**7.00@ 7.25**
Pool 3, Hamp. Roads	5.35@ 5.40	**6.25@ 6.50**
Pools 5-6-7, Hamp. Rds.	5.75@ 6.00	**6.75@ 7.00**

BUNKERS

Pool 1, New York	$5.75@$6.00	**$6.75@$7.00**
Pool 9, New York	5.35@ 5.65	**6.50@ 6.75**
Pool 10, New York	5.05@ 5.25	**6.25@ 6.50**
Pool 11, New York	4.95@ 5.10	**5.90@ 6.05**
Pool 9, Philadelphia	5.60@ 5.80	**6.10@ 6.30**
Pool 10, Philadelphia	5.25@ 5.50	**5.75@ 6.00**
Pool 11, Philadelphia	5.00@ 5.20	**5.50@ 5.70**
Pool 1, Hamp. Roads	6.75	**7.25**
Pool 2, Hamp. Roads	6.20@ 6.30	**7.00@ 7.25**
Pools 5-6-7, Hamp. Rds.	5.75@ 6.00	**6.75@ 7.00**

†Advances over previous week shown in heavy type; declines in *italics*.

Coming Meetings

National Conference of Business Paper Editors. Annual convention at Hotel Astor, New York City, Nov. 8-10. Secretary, D. G. Woolf, 334 Fourth Ave., New York City.

Illinois Mining Institute. Annual meeting, Nov. 12 and 13 at Harrisburg, Ill. Edward Coulehan, superintendent, Saline County Coal Corp., Harrisburg, Ill., chairman of committee on arrangements.

Bituminous Coal Conference, Carnegie Institute of Technology, Pittsburgh, Pa., Nov. 15 to 18. Secretary, Prof. Sumner B. Ely, Carnegie Institute of Technology, Pittsburgh, Pa.

Harlan County Coal Operators' Association. Annual meeting Nov. 17 at Harlan, Ky. Secretary, E. R. Clayton, Harlan, Ky.

National Industrial Traffic League. Commodore Hotel, New York City, Nov. 17 and 18. Executive secretary, J. W. Beek, Chicago, Ill.

American Welding Society. Fall meeting Nov. 17-19, Buffalo, N. Y. Secretary, M. M. Kelly, 29 W. 39th St., New York City.

Southern Appalachian Coal Operators' Association. Annual meeting, Nov. 19, at Knoxville, Tenn. Secretary, R. E. Howe, Suite 1306, General Building, Knoxville, Tenn.

American Society of Mechanical Engineers. Annual meeting, Engineering Societies Building, 29 W. 39th St., New York City, Dec. 6-9. Secretary, Calvin W. Rice, 29 W. 39th St., New York City.

Coal Mining Institute of America. Annual meeting, Chamber of Commerce, Pittsburgh, Pa., Dec. 8, 9 and 10. Secretary, H. D. Mason, Jr., Box 604, Ebensburg, Pa.

Coal Operators' Association of the Thick Vein Freeport Seam of Penn. Annual meeting Dec. 14, at Pittsburgh, Pa. Secretary, C. W. Gibbs, Pittsburgh, Pa.

Smokeless Coal Operators' Association of West Virginia. Annual meeting Dec. 9, at Washington, D. C. (tentative) Secretary, E. J. McVann, Insurance Bldg., Washington, D. C.

Industrial Notes

R. C. Brower recently was appointed general manager of the Timken Roller Bearing Service & Sales Co., which maintains twenty-five direct factory branches and several hundred authorized distributors. Mr. Brower will make his headquarters in Canton, Ohio, at the main plant of the Timken Roller Bearing Co., but will devote a great deal of his time to maintaining contact in the field. He has been in the bearing industry since 1913; for the past four years with the Timken company.

The Maxim Silencer Co., of Hartford, Conn., is now occupying new offices in the Capitol Building, 422 Asylum Street.

New Equipment

Copper Alloy Arc Weld Bond Is Easily Applied

A new welded bond for application to the rail base by the copper alloy metallic arc process, which includes a hook on the terminal for holding in place while the welding process is taking place, has been placed on the market by the Ohio Brass Company. It is known as Type AW-12.

This bond is provided with malleable cast iron terminals which catch and retain the deposited metal from the arc, and also act as mechanical protection for the finished weld.

The hook is cast as a part of the terminal and is so shaped that the bonding crew can attach it to the rail with a tap of a hammer and thus firmly hold it in place while welding.

The size and shape of the terminals, which project from the rail, provide ample working space for the electrode. After striking the arc on the rail, the operator may clearly see that his arc is drawn to the proper length, and that a thorough arc-fusion is made of the rail surface, the terminals, the exposed surface of the copper strands and the deposited metal. These features and the use of copper metallic arc process, with copper alloy as the electrode, contribute in effecting a complete homogeneous fusion to the rail, bond, and deposited metal. The result is a strong, compact weld.

This bond has a soft copper sleeve between the bond terminal and the strands which protects the strands where they enter the terminal. It is said that this prevents breaking of the strands from bending and vibration.

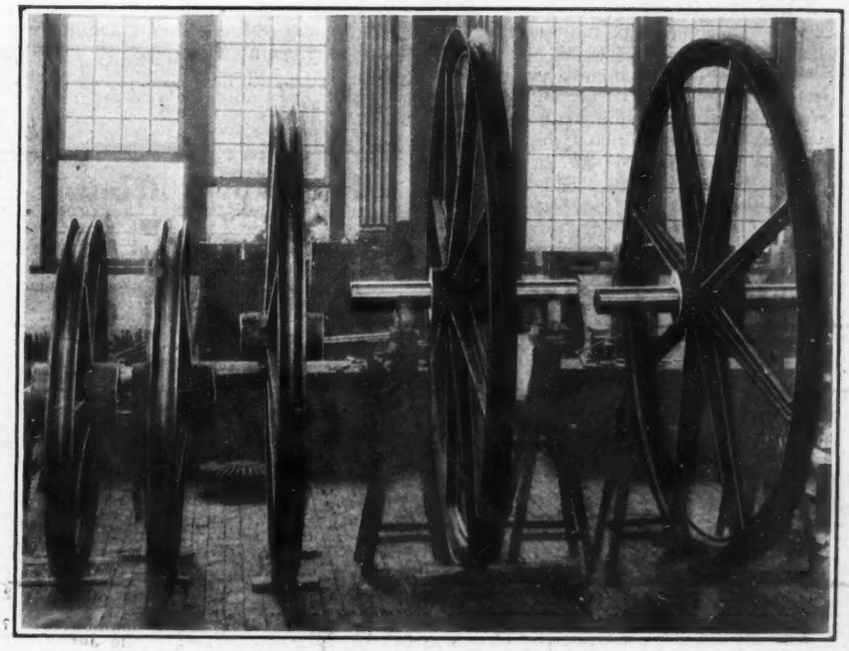
Cable Becomes Part of Weld

Every wire in the cable strand extends through the terminal and becomes part of the weld providing a copper path from weld to weld, insuring maximum conductivity.

Head Sheave's Weight Cut By Steel Casting

Heretofore the bicycle- or wrought-spoke sheave has been in almost universal use on tipples and headframes. Although this type has given fairly satisfactory service there have been instances of the spokes working loose or breaking off. These have been particularly frequent where proper care has not been exercised in casting the rim and hub so as to avoid undue shrinkage stresses.

To meet the need for a stronger sheave the ordinary bicycle type has been built with rim and hub made of steel casting. On acount of the unequal shrinkage of steel, however, and the excessive stresses set up thereby, it was found difficult to cast a bicycle type of steel sheave that would run



Rim, Hub and Spokes Cast Integral

The rims of these sheaves are machined. This not only assures a smooth path for the rope and accordingly reduces the wear upon it, but inasmuch as the finished groove is a true circle vibration of the cage is cut to the minimum.

true, as the rim had a tendency to warp out of shape. This difficulty could be only partially overcome by machining the rim for although this trued up the groove, if the wheel was badly distorted to begin with, perfect balance could never be secured. This was particularly noticeable at high hoisting speeds resulting in rapid rotation of the sheave.

All-steel cast sheaves as shown in the accompanying illustration and built by the Vulcan Iron Works of Wilkes-Barre, Pa., seem to overcome most of these troubles. As may be seen these sheaves are cast integral in one piece. It is claimed by the manufacturer that these sheaves have adequate strength, proper balance and great durability, while they cost no more than those of the bicycle type. Inasmuch as steel casting is from four to seven times as strong as cast iron, rim and hub sections can be appreciably reduced without sacrifice of strength.

Inertia is decreased on account of the sheave being lighter. This reduces the wear and tear on the rope. The groove of the new wheel is, of course, machined, thus assuring that both sheave and rope will run true, avoiding vibration of both cage and headframe. This machined groove also forms a smooth path or bed for the rope thereby reducing the friction and wear upon it.

Gasoline Shovel Can Be Converted to a Crane

Electric and gasoline driven 1-cu.yd. shovels find a wide range of usefulness. The Osgood Co., of Marion, Ohio, has announced a 1¼ yd. machine as an addition to this class of equipment already manufactured.

This machine in addition to shovel work is designed for service as a crane to handle a hook, block or clamshell bucket, and as a dragline excavator without necessitating any changes or additions to the operating machinery. The only alteration required is the substitution of the proper booms and buckets.

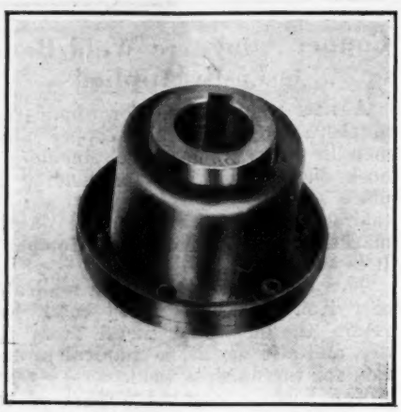
Shovel crowding is accomplished by a simple wire-rope mechanism which is adjustable to all boom angles. The machine is mounted on an inclosed-gear drive, continuous-tread truck, and is driven by a six-cylinder gasoline engine. Two-finger control of the drum clutches is used. The gasoline tank being of cast iron serves also as a counterweight.

Can Be Used as a Crane or Shovel

Without making serious changes to the structure of this machine it can be converted to a crane with hook, block or clamshell bucket, or used as a dragline excavator.

Safety Is Provided for In New Coupling

To insure direct-connected equipment against the hazards of ordinary misalignment was the aim of the Falk Corporation, Milwaukee, Wis., in the design of its new flexible coupling, made in standard sizes from ½ to 30,000 hp. at 100 r.p.m. The manufacturer claims that the torsional resiliency definitely safeguards the driving unit from the destructive vibration of the driven machine.



Does Not Transmit Vibration

Shafts may be disconnected without disturbing either machine. Great accuracy in alignment is not necessary with this coupling and it is, accordingly, easy to "line up."

This device is extremely simple, consisting of a tempered steel spring, in segments, two flanged steel discs with slots, into which the spring fits, and a steel shell. The shell protects the coupling parts from dirt, acts as a fastener for the spring, and as a container for lubricant.

These couplings are precision-made to fine limits. Their construction provides for disconnection of the shafts, without disturbing either machine. The work of aligning is reduced to a simple operation, requiring only a short straight edge and an ordinary set of feelers.

Publications Received

Then and Now. U. S. Department of the interior, Washington, D. C. A review of the work of the Interior Department from 1923 to 1926. Pp. 52; 6x9 in.; illustrated.

General Chemistry, by H. P. Cady. Second edition. McGraw-Hill Book Co., 370 Seventh Ave., New York City. Price $3.25. Pp. 522; 6x9 in.; illustrated. In the present edition special effort has been made to clarify all obscure points, and new matter has been added, especially in the sections dealing with atomic structure.

Mathematics for Engineers, by Raymond W. Dull. McGraw-Hill Book Co., 370 Seventh Ave., New York City. Price, $5. Pp. 780; 5½x8 in.; illustrated. A quick, convenient and reliable reference and text book for engineers covering those phases of mathematics especially important in engineering work.

Recent Patents

Coal-Cutting Machine; 1,592,040. Matthew S. Moore, London, England, assignor to C. W. Engineering Co., Ltd., Stoke-on-Trent, England. July 13, 1926. Filed May 6, 1922; serial No. 559,063.

Automatic Self-Loading Hoist; 1,592,602. Wm. E. Howlett, Moline, Ill. July 13, 1926. Filed March 5, 1925; serial No. 13,118.

Coal Cutter; 1,592,687. Charles E. Waxbom, Columbus, Ohio, assignor to the Jeffrey Mfg. Co., Columbus, Ohio. July 13, 1926. Filed Dec. 27, 1923; serial No. 683,001.

Process for Allaying Dust in Fuels; 1,592,810. Joel R. Belknap, Toledo, Ohio. July 13, 1926. Filed Feb. 8, 1926; serial No. 86,962.

Coal-Treating Process; 1,592,989. Harry E. Nolan, Des Moines, Iowa, assignor one-half to E. D. Griffiths, Des Moines, Iowa. July 20, 1926. Filed Feb. 7, 1925; serial No. 7,709.

Pneumatically-Operated Chair for Hoist Cages; 1,595,004. Harry V. Haight, Sherbrooke, Canada, assignor to Ingersoll-Rand Co., Jersey City, N. J. Aug. 3, 1926. Filed Dec. 30, 1925; serial No. 78,360.

Coal-Washing Apparatus; 1,594,626. William C. Menzies, Scranton, Pa. Aug. 3, 1926. Filed Sept. 23, 1924; serial No. 739,246.

Mine-Car Coupler; 1,596,138. Andrews Allen, Chicago, Ill. Aug. 17, 1926. Filed April 12, 1924; serial No. 705,971.

Scraper; 1,597,005. Edwin Ball, Birmingham, Ala., and Clarence E. Abbott, Bessemer, Ala. Aug. 24, 1926. Filed May 29, 1922; serial No. 564,435.

Concentrating Table; 1,597,066. Emil Deister, Fort Wayne, Ind. Aug. 24, 1926. Filed Aug. 8, 1924; serial No. 730,916.

Protecting Device for Electric Detonators; 1,597,445. Harry L. Grant, Tamaqua, Pa., assignor to Atlas Powder Co., Wilmington, Del. Aug. 24, 1926. Filed Oct. 19, 1925; serial No. 63,452.

Method of Making Coal Briquettes of Anthracitic Quality from Immature Carboniferous Substances; 1,597,570. Jacques Beaudequin, Paris, France. Aug. 24, 1926. Filed June 6, 1923; serial No. 643,757.

Undercutting Machine; 1,597,923. Richard Peale, St. Benedict, Pa., assignor to Rembrandt Peale, St. Benedict, Pa. Aug. 31, 1926. Filed June 23, 1920; serial No. 391,103.

Flitting Truck or Trolley for Coal-Cutting Machines; 1,598,105. Gilbert Rimmer, London, England, assignor to Sullivan Machinery Co., Chicago, Ill. Aug. 31, 1926. Filed June 16, 1924; serial No. 720,419.

Coal Cutting Machine; 1,599,043. Edward J. Doberstein, Blue Island, Ill., assignor to the Goodman Mfg. Co., Chicago, Ill. Sept. 7, 1926. Filed Aug. 21, 1922; serial No. 583,076.

Mine-Car Coupling; 1,599,289. Hugh W. Sanford, Knoxville, Tenn. Sept. 7, 1926. Filed April 25, 1924; serial No. 708,877.

Mine Car; 1,599,330. Oran Irvin, Cairnbrook, Pa. Sept. 7, 1926. Filed March 31, 1923; serial No. 629,052.